MESSOA

Network Camera

NCB750 / NCB752
NDR720 / NDR722
NCR770 / NDR772
NDR721

User Manual

201504 A2

Table of Contents

Important Notices 2

Get Started 2

1. Viewing Preparation 3

IP Finder 3

Discovering devices in Windows Network 4

ActiveX add-on Installation 5

2. Accessing the camera 7

Viewing the live video 7

The Live view page 9

3. Video & Audio 11

4. Network Configuration 20

5. Recording 25

Configuration of Event Handling 31

6. Event Management 31

Examples of Event Handling 38

7. System Options 41

8. Connectors & LED 45

9. Focus Assist Button (For NCB750&NCB752) 50

10. Desiccant Bag Replacement (For NCR770&NCR772) 51

11. Troubleshooting 52

Check firmware version 52

Upgrade device firmware 52

Recover device settings 54

Appendix A: Specifications of Fixed Network Camera *55*

Appendix B: Specifications of IR Bullet Network Camera *57*

Appendix C: Specifications of Indoor IR Dome Network Camera *59*

Important Notices

– Read Before Use

This instruction manual is intended for administrators and users of the network camera, including instructions for using and managing the camera on your network. The use of video surveillance devices can be prohibited by laws that vary from country to country. It is the user's responsibility to ensure that the operation of such devices is legal before installing this unit for surveillance purposes.

Heed all warnings

Before installing the IP Camera, please read and follow all the safety and operating instructions to avoid any damages caused by faulty assembly and installation. The user must adhere to all the warnings on the product and in this manual.

Liability

Every reasonable care has been taken in the preparation of this instruction manual. We cannot be held responsible for any technical or typographical errors and reserves the right to make alterations to the product and manuals without prior notice. We make no warranty of any kind with regard to the material contained within this manual, including, but not limited to, the implied warranties of merchantability and fitness for a particular purpose. The user should verify the relevant information is current and complete before placing orders. All products are sold subject to our terms and conditions of sale at the time of order acknowledgement.

We shall not be liable nor responsible for the applications and resale of its products or bundled software with statements different from or beyond the specification/parameters stated by us. We are under no obligation to provide any further technical support service or product/software alteration beyond our representation.

Trademarks

All names used in this manual and products are probably registered trademarks of respective companies.

CE/FCC Statement (EMC)

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules which are designed to provide reasonable protection against such interference when the equipment is operated in a commercial environment. If the equipment is not installed and used in accordance with the instruction, it generates, uses, and can radiate radio frequency energy which may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause interference, in which case the user at his/her own expense will be required to take whatever measures may be required to correct the interference.

Get Started

This user manual is designed as a reference for the installation and manipulations of the unit including the camera's features, functions, and detailed explanation of the menu tree. Please read this manual thoroughly and save it for future use before attempting to connect or operate the unit.

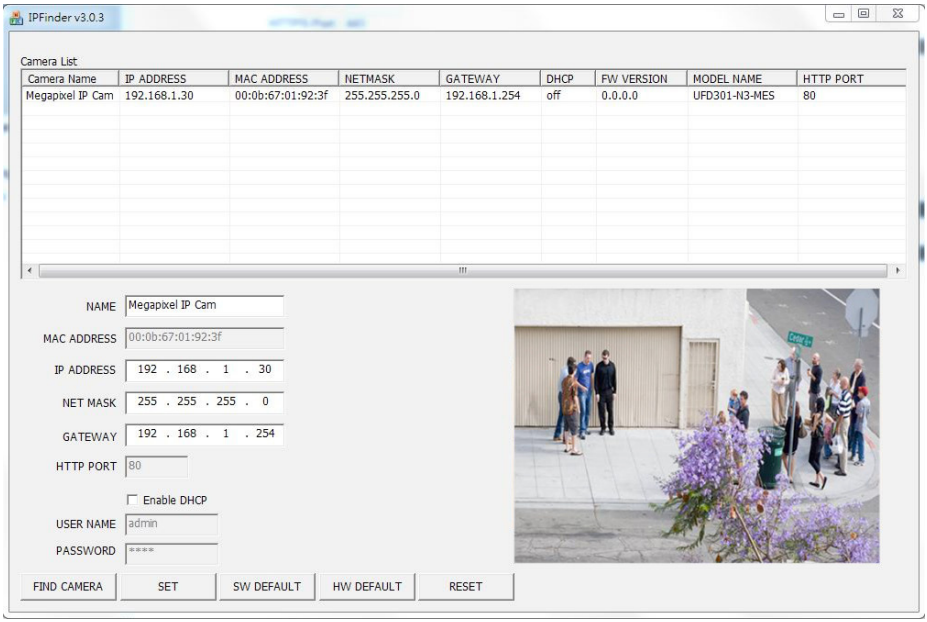
1. Viewing Preparation

IP Finder

IP Finder is a utility program that helps users locate the unit in the local area network which the computer is connected to. Please note that IP Finder works only on Microsoft Windows XP, Microsoft Windows Vista, and Microsoft Windows 7. Steps to get the utility program running are listed below.

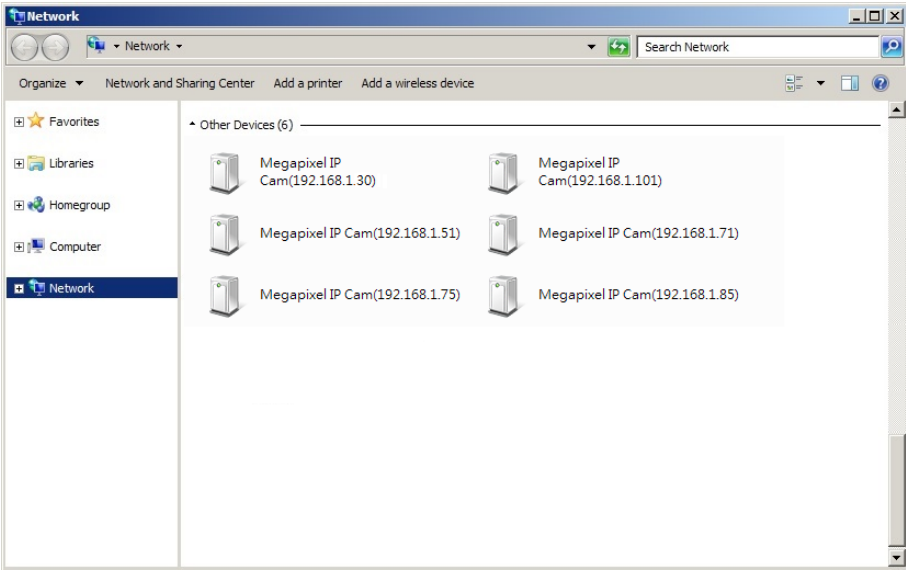
1. Download IP Finder from MESSOA Website to the computer.
2. Double click on IPFinder.exe in the IP Finder folder, and the IP Finder window should pop out.
3. The window would list information of units in operation at present. Press FIND CAMERA to find more units.
4. Locate and double-click one of the cameras in the list you want to configure the network settings. If you have multiple cameras connected to your local network, locate the MAC address on the camera to distinguish the target camera from others.
5. Configure the following settings as needed.
    - NAME: Enter a descriptive name for the camera.
    - NETWORK SETTINGS: If you have a DHCP server on your network to assign IP addresses to network devices, enable the DHCP option. Otherwise, manually enter the IP ADDRESS, NET MASK and GATEWAY values.
    - USERNAME & PASSWORD: Manually setup preferred username and password.
    - SET: Whenever you make revision of camera settings, click "SET" to take effect.
    - SW DEFAULT: To perform the factory defaults excluding network settings of the selected camera.
    - HW DEFAULT: To perform the factory defaults of the selected camera.
    - RESET: To reboot the selected camera.

Click Save to enable the settings and click Exit to exit the utility.



Discovering devices in Windows Network

If the IP camera is installed in a network with DHCP and UPnP services, after obtaining an IP address from DHCP server, it can then be discovered in "Windows Network" of a client PC, see figure below. The reason for being automatically discovered is that the IP camera's UPnP is default enabled (see ***Network*** → ***Network Connectivity***).



NOTE:

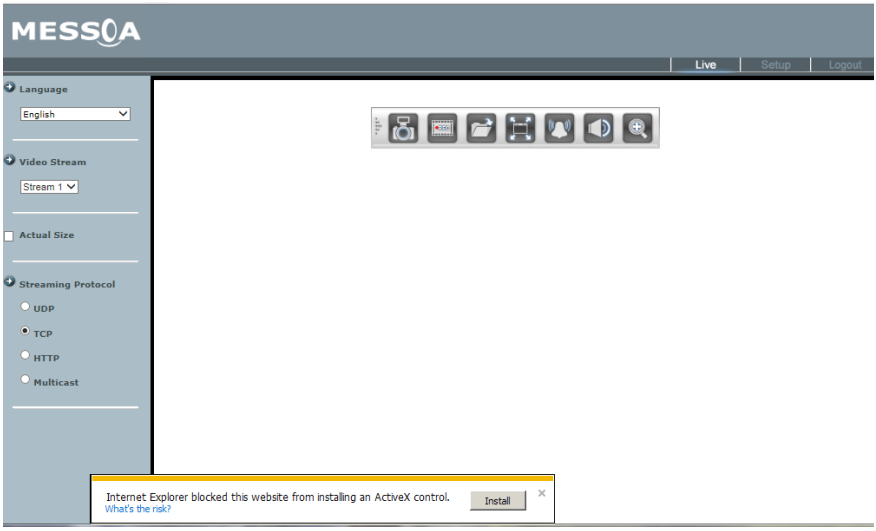
The term "**Windows Network**" in given figure above is used in Windows Vista / 7. It can be referred to Windows XP "**My Network Places**" which possesses the same capability of discovering UPnP devices.

Right-click on the device and select "Properties", the pop-up window shows all the information related to the device, including the web access info. Use the **web address to** connect to the IP camera. Or simply double-click on the selected device, which gets immediately access to the camera webpage.

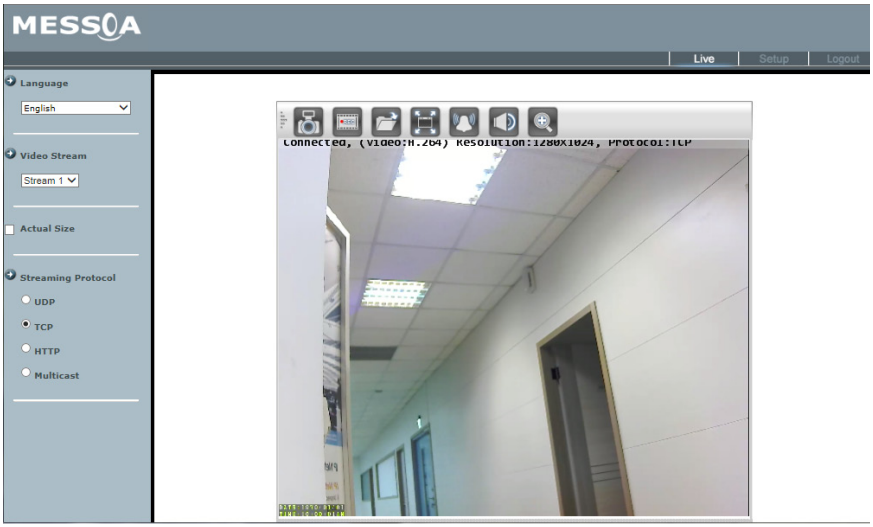
To identify the camera from the listed devices in "Network", utilize the UPnP name and the device's MAC address. This MAC address can be found on the label.

ActiveX add-on Installation

It is recommended to use Internet Explorer 8 or later as the primary browser to access the IP cameras website. The first-time access to the camera webpage will be prompted to install the ActiveX. To allow the installation, click "**Install**" on the message bar and follow the instructions to complete ActiveX installation.



When the installation is completed, IE browser can display the live video of the IP camera as the below figure.



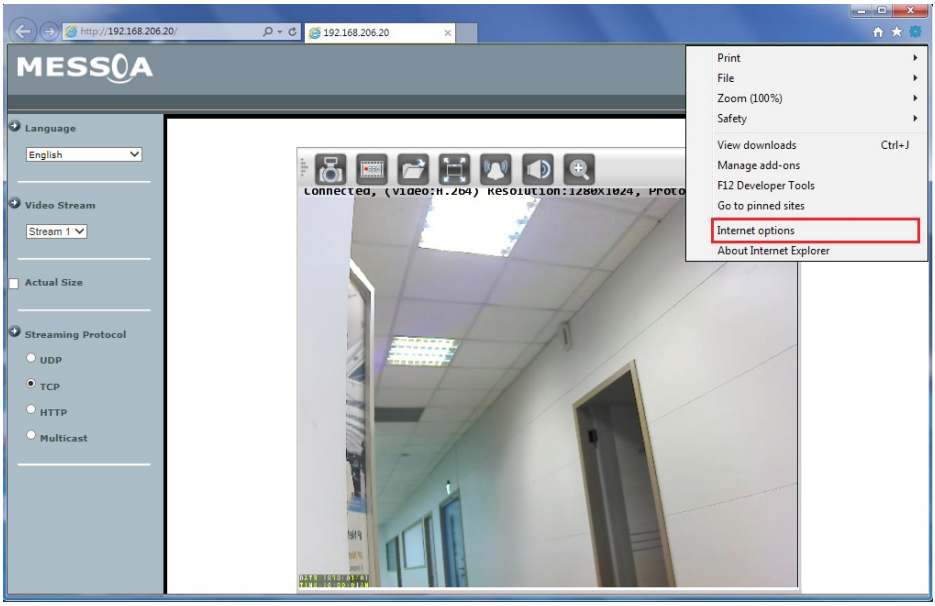
NOTE:

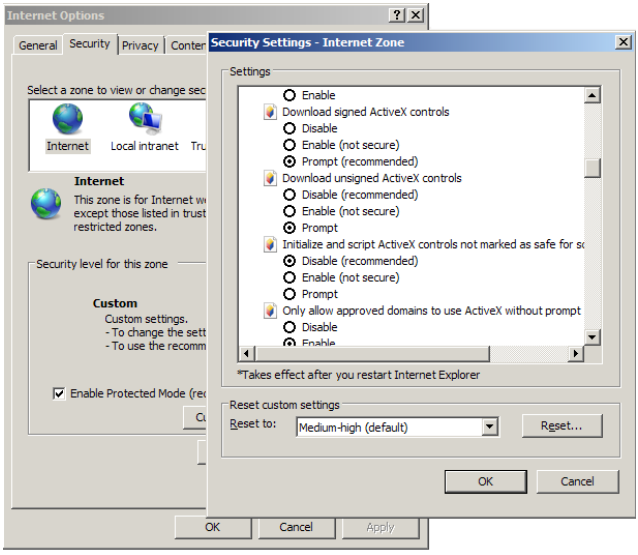
If, however, there is not any prompted message or ActiveX cannot be installed at all, it is needed to change the IE security level and settings.

<Example>

Internet Explorer 9: Internet Options → Security → Custom level

Ensure the "Download signed ActiveX controls" setting is either "Enable" or "Prompt" selected.





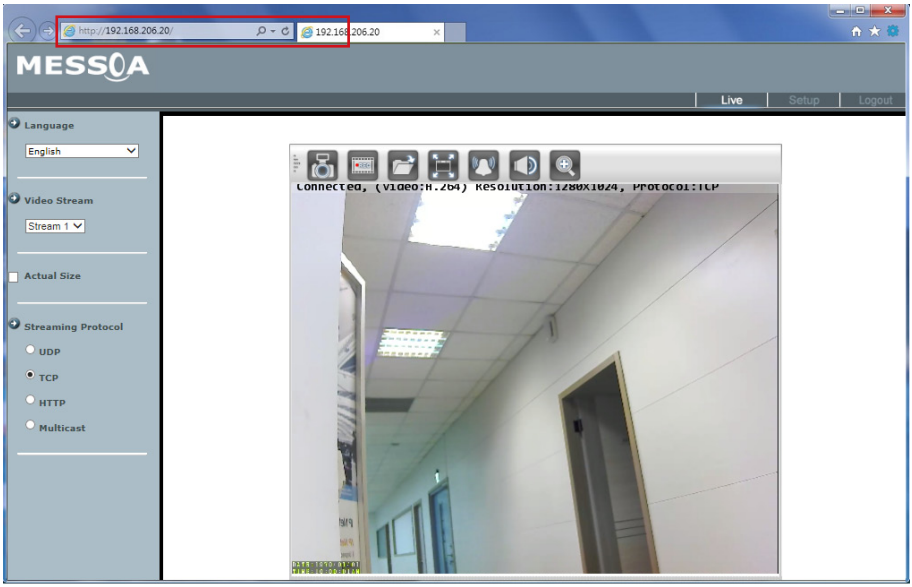
2. Accessing the camera

Viewing the live video

With the correct installation and IP settings, the camera device can be approached via network. There are three ways to view the live video from the camera,

1. **Internet Explorer**

   - Launch IE browser and input the IP address of the camera .



NOTE:

IP cameras also support the other web browsers for viewing the live video such as Firefox, Google Chrome or Safari.

2. RTSP Player

The live video of the camera can be played with RTSP players, such as VLC or QuickTime.

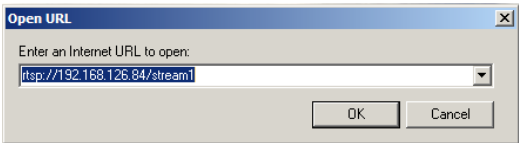
The camera supports two simultaneous video streaming (see ***Video & Audio*** → ***Video Setting***). To gain access to the camera for each video stream, the **RTSP URL** will be required. The default paths for the streams are "stream1", "stream2" and "stream3". The URL format should be input as below.

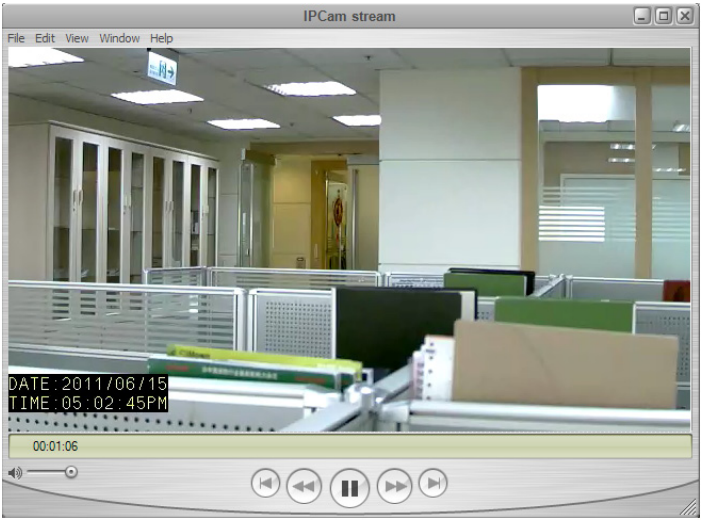
Stream1: rtsp://Camera_IP/stream1

Stream2: rtsp://Camera_IP/stream2

Stream3: rtsp://Camera_IP/stream3

The example given below is the live video displayed with QuickTime player.



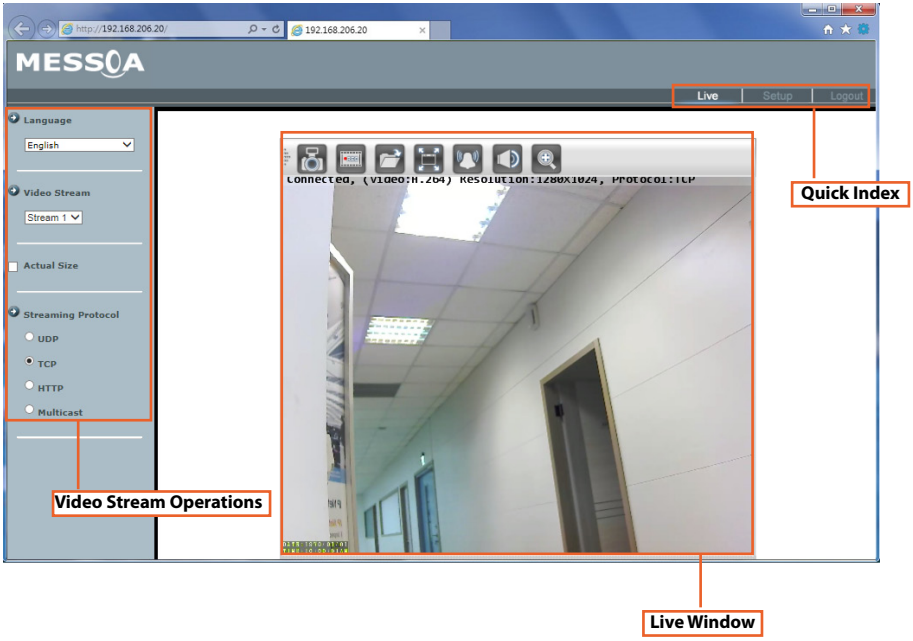


3. NVR / CMS Software

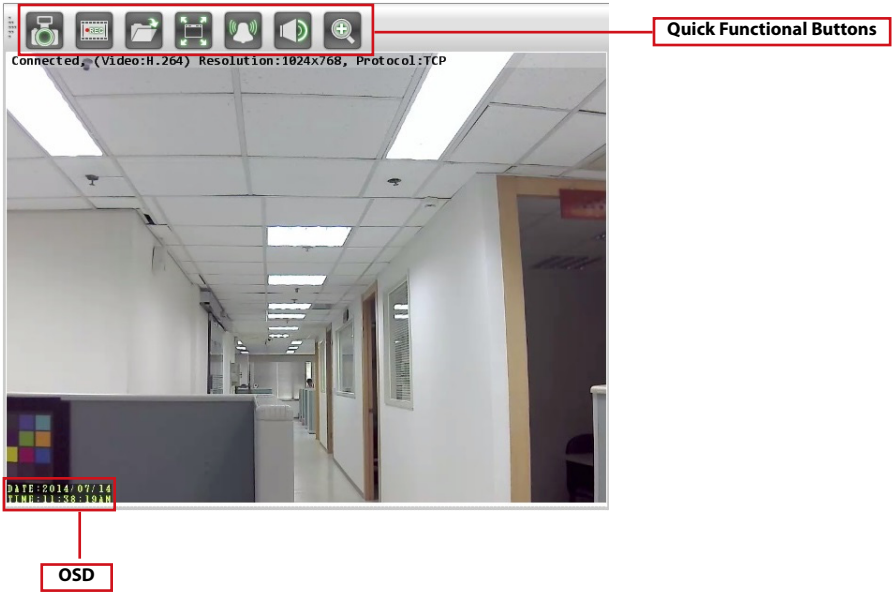
IP cameras are ONVIF conformant products. Most of ONVIF conformant NVR / CMS software can retrieve the video from the cameras for both live view and recording. For more details about the support information and operation, please contact the software vendors.

The Live view page

The following illustration shows the front page of IP camera website, Options within each item may differ slightly among different products (Here takes NDR721 as an example to illustrate the UI functions of the camera).



Live Video Window



Snapshot: Press the button to capture an image photo

Record: Press the button to start recording. Press again to stop it.

Record Path/Set Path: set up a file path that video clips and snapshots can be stored.

Full screen: Press the button to enter the full screen mode. Press ESC key to return.

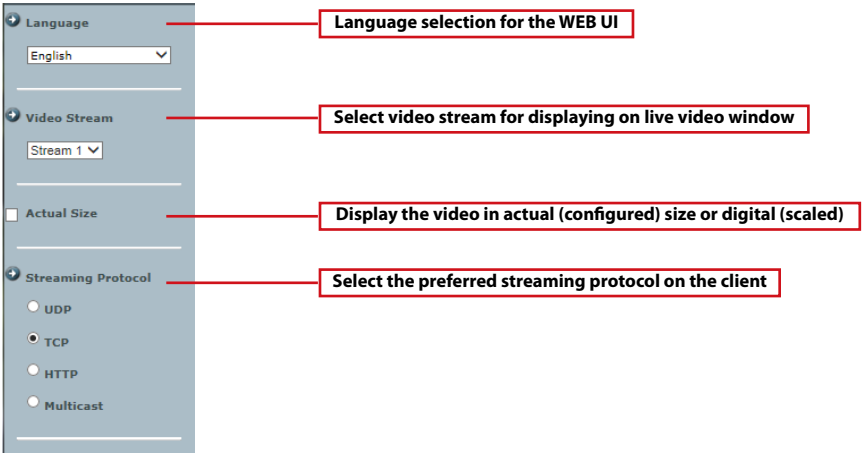
Manual trigger: Press the button as triggering an event. See Event Management for detail.

Listen: Enable / Disable to receive video from camera. (NCR770, NCR772 do not support)

Talk: Enable / Disable to send audio to camera. (Only for NCB750, NCB752)

Digital Zoom: toggle the digital zoom function.

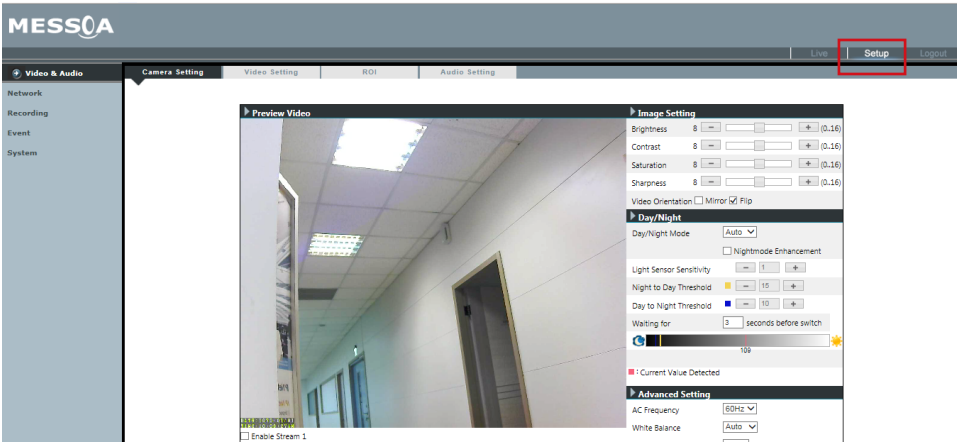
Video Stream Operations



3. Video & Audio

This section describes how to configure the video streaming of the device and the related camera image configurations. Users with Administrator or Operator authority (see ***System*** → ***User Management***) are able to do these configurations.

Click on "**Setup**" of **Quick Index** to enter the **Video & Audio** page shown as below.



The sub-settings under "**Video & Audio**" are:

- **Camera Setting**
- **Video Setting**
- **ROI (Region Of Interest) (NCB750, NCR770 and NDR720 Excluding)**
- **Audio Setting (NCR770 and NCR772 Excluding)**

Camera Setting

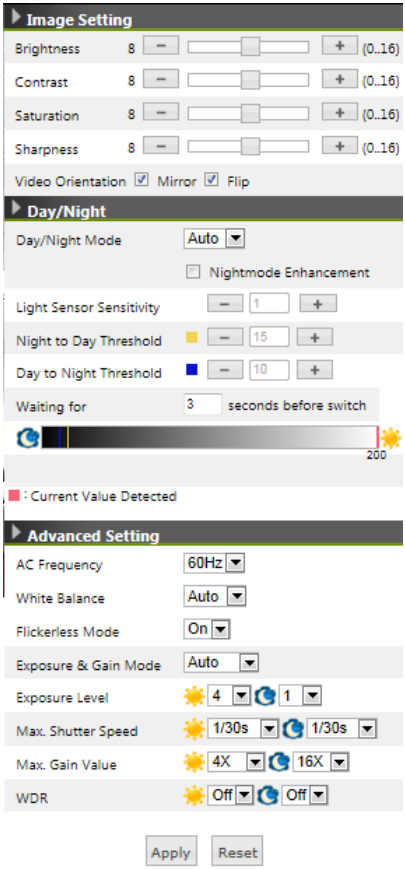


Image Setting

Brightness: the luminance of image view. Default value is 8; adjustable from 0 to 16.

Contrast: the ratio of luminance of white to black. Default value is 8; adjustable from 0 to 16.

Saturation: colorfulness of a color related to its own brightness. Default value is 8, adjustable from 0 to 16.

Sharpness: refer to image acutance, which presents in the edges contrast of an image. Default value is 8, adjustable from 0 to 16.

The 4 correlates are referring image appearance in terms of color/vision that is adjustable according to user preferences.

Video Orientation: change the image orientation

- **Mirror:** rotate the image horizontally
- **Flip:** rotate the image vertically

NOTE:

These operations are usually applied when camera must be installed in an exceptional position. For the example of ceiling installation, camera must be installed upside-down.

Day/Night

Day/Night Mode:

Switch the video images for **Day** (plenty of light) or **Night** (Low light) scene. In default "Auto" mode, camera will switch to Day or Night vision according to the light intensity. The Day / Night modes contain 2 actions: switching IR Filter **On / Off**, and image hue **Color / Mono**.

In day mode, the IR filter is switched in to avoid the image sensor from receiving the infrared, thus the true color image is provided. When camera enters night mode, IR filter is switched off to allow IR illuminations going into the sensor, thus increasing the images light level. The image color is switched to B/W (Mono mode).

Nightmode Enhancement

With this function enabled, the better night vision will be obtained. However, the number of FPS may drop depends on the actual environmental illuminations.

Light Sensor Sensitivity

The value reflects to adjust the sensitivity of Light Sensor.

Night to Day Threshold

The value reflects the timing switching from night to day.

Day to Night Threshold

The value reflects the timing switching from day to night.

Switch Time

The value reflects the delay time for both ways of day and night switch.

Advanced Setting

AC Frequency: Anti-flicker setting for environment with fluorescent light sources, image sensor needs to fit the frequency of light (power) source. For instance, the power frequency is 50Hz for most European countries, while 60Hz is typically for US. This setting is therefore regionally different.

White Balance: The selections for different lightening condition, which is refereeing to color temperature. The default value is set to AUTO.

Flickerless Mode: Flickering can also present in various exposure level. Set "Flickerless" Mode "On" to fix the maximum shutter speed (auto exposure control). Thus, the flickers can be eliminated.

Exposure & Gain Mode: Select auto / manual Exposure & Gain control mode. The selection defines the controlling in a range of or fixed value, according to the following two items (**Shutter Speed** and **Gain Value**). The configurations will be limited at selected maximum rates when AUTO mode is on.

Exposure Level: Adjust Exposure level for a target level of sensed brightness. Auto exposure function will adjust to exposure time to make the sense image brightness close to the target.

Max. Shutter Speed: Also refer to the exposure time. Higher shutter speed is normally applied under strong light circumstance, so the image won't be overexposure. Lower shutter speed, on the other hand keeps image luminance in low light environment.

Max. Gain Value: Also refer to the amplification factor for the incoming light. Increasing the gain value provides a brighter image, but the noises may also be increased.

WDR: Enable this function for image objects under backlight circumstances.

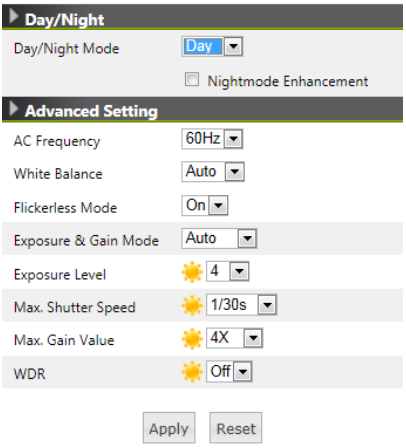
NOTE

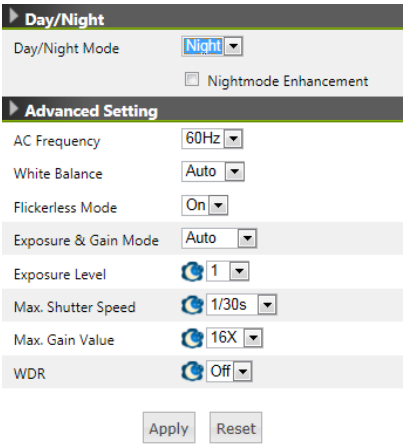
The "**Exposure Level**", "**Shutter Speed**", "**Gain Value**" and "**WDR**" can be configured for daytime and nighttime. The configurations will be applied according to the current status of "**Day/Night Mode**".

: represents the Day mode

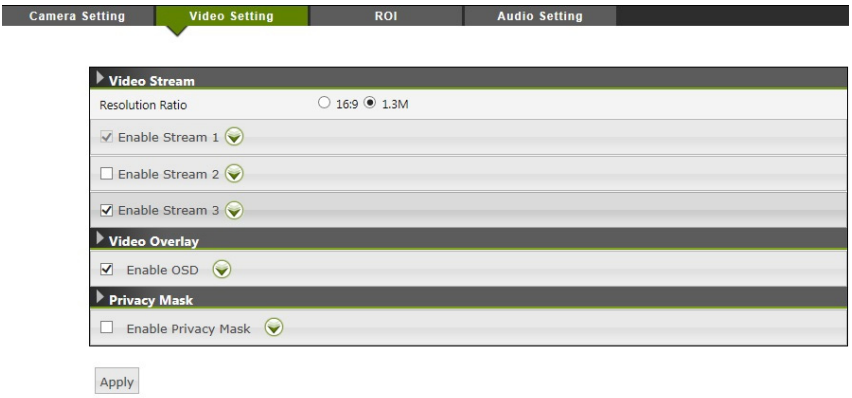
: represents the Night mode

The setting items with the Day or Night mode symbol will be altered along with the setting of Day/Night mode. The examples are illustrated as below.





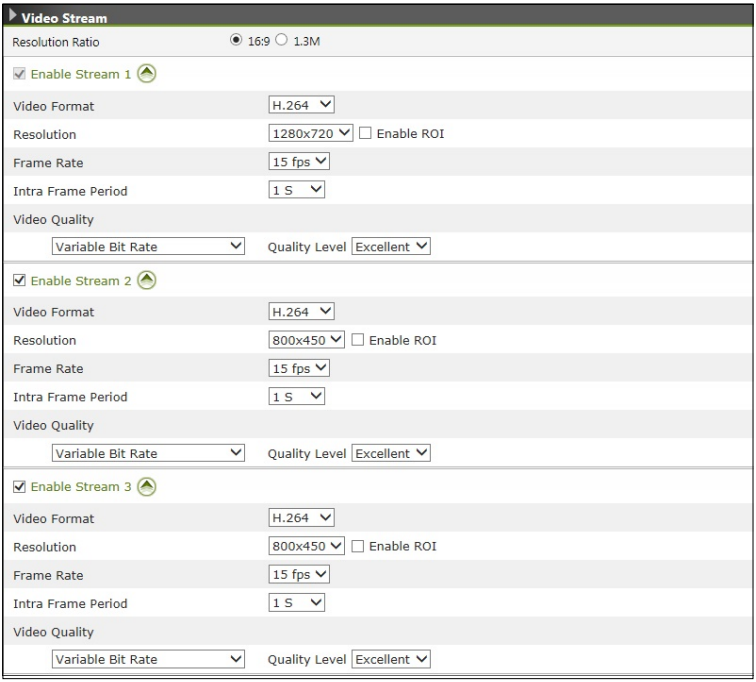
Video Setting



Video Stream

This tab provides detailed stream configurations. These settings can affect resolution ratio, video size, quality. The maximum transmission performance can be expected under the condition of full network bandwidth.

The camera supports up to 2 or 3 video streams (3 streams only for NDR721). Each stream can be configured with following items.



Resolution Ratio(Only for NDR721): 16:9 or 1.3M mode is selectable. The image ratio of Stream1 to Stream 3 will change at the same time based on a pre-defined table if user changes the ratio mode.

Video Format: H.264, MPEG4 and MJPEG are available for the selection. The demand of bandwidth and storage requirement differs from the selection of video format. In the request of same video quality, H.264 contributes to less bandwidth and storage requirement, which can be more efficient than MPEG4 or MJPEG.

Resolution: The resolution here describes an image size counted in width by height, e.g. 1280x1024, referring to pixel resolution.

The Codec combination table are listed in the following table.

Mode ID		NDR721								
Stream		Stream1 (Main Stream)			Stream2 (Sub Stream)			Stream3 (Sub Stream)		
Compression		*H.264*	*MPEG4*	*MJPEG*	*H.264*	*MPEG4*	*MJPEG*	*H.264*	*MPEG4*	*MJPEG*
Resolutions	16:9 mode	HD720, 800x450, 640x360, 320x180			800x450, 640x360, 320x180			800x450, 640x360, 320x180		
	1.3M mode	1280x1024, 1024x768, 800x600, 640x480, 320x240, 60x120			800x600, 640x480, 320x240, 160x120			800x600, 640x480, 320x240, 160x120		
HD720		30fps	25fps	30fps	X			X		
		15fps			15fps			15fps		
1280x1024		30fps	20fps	30fps	X			X		
		15fps			15fps	10fps	15fps	15fps	10fps	15fps
1024x768		X	30fps	X	X			X		
		30fps	15fps	30fps	15fps			15fps		
800x600/ 800x450		30fps			15fps			15fps		
640x480/ 640x360		30fps			30fps			30fps		

Mode ID	NCB752, NDR722, NCR772					
Stream	Stream1 (Main Stream)			Stream2 (Sub Stream)		
Compression	*H.264*	*MPEG4*	*MPEG4*	*H.264*	*MPEG4*	*MJPEG*
Resolutions	1080P, HD720, 800x450, 640x360, 320x180			800x450, 640x360, 320x180		
1080P	30fps	10fps	30fps	X		
	25fps	X	25fps	15fps		
	15fps	X	15fps	30fps		
HD720	X	30fps	X	X		
	X	15fps	X	15fps		
	30fps	X	30fps	30fps		
800x450	30fps			30fps		

Mode ID	NCB750, NDR720, NCR770					
Stream	Stream1 (Main Stream)			Stream2 (Sub Stream)		
Compression	*H.264*	*MPEG4*	*MPEG4*	*H.264*		
Resolutions	1280x800, HD720, 800x450, 640x360, 320x180			800x450, 640x360, 320x180		
1080P/ HD720	30fps	X	30fps	30fps	25fps	30fps
	X	30fps	X	15fps	X	15fps
	X	15fps	X	15fps		
800x450	30fps			30fps		

Enable ROI(NCB750, NCR770 and NDR720 Excluding): Once the ROI function enabled, relative ROI area could be setup under the "ROI" page.

Frame Rate: It represents the number of frames that are displayed per second. The higher the frame rate is the better/ smoother the video stream can be obtained. However, it would be the tradeoffs for the higher network bandwidth and storage requirement.

Intra Frame Period: This is applied only in MPEG4 / H.264 which the video stream is composed of I-frames (full image information) and P-frames (motion-compensated difference information).

This setting configures the time period between 2 I-frames. The shorter period means the higher frequency of I-frame. Video can then be well handled whereas the bit rate may increase.

Video Quality: There are four types of bit rate controls for video quality adjustment, Constant Bit Rate (CBR), Variable Bit Rate (VBR), Enhanced Constant Bit Rate (ECBR) and Enhanced Variable Bit Rate (EVBR).

For **CBR**, the video bit rate is between low to high bandwidth based on different resolutions. The user can set the desired bit rate to match the limitation of bandwidth.

For **VBR**, the user should choose the quality level to set the video quality rather than bit rate. The quality level separates into standard, good and excellent.

For **ECBR**, the video bit rate is based on normal CBR mode. However, the target bit rate can be

increased to max target bit rate while lots of motion in video. The max target bit rate will keep a pre-

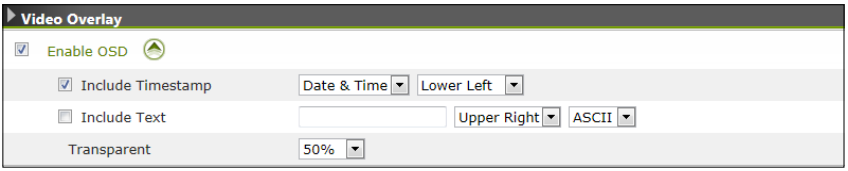
defined time period and then back to normal CBR bit rate.

For **EVBR**, the video bit rate is based on normal VBR mode. However, the bit rate can be limited to the max bit rate while lots of motion in video

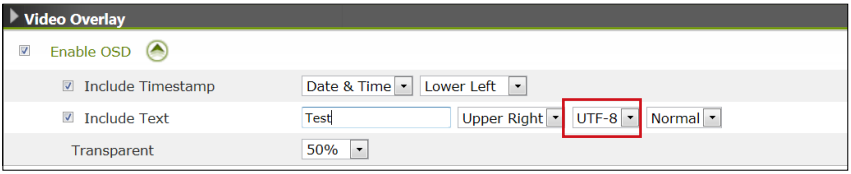
NOTE:

CBR, ECBR, and EVBR are not applicable in MJPEG video mode.

Video Overlay

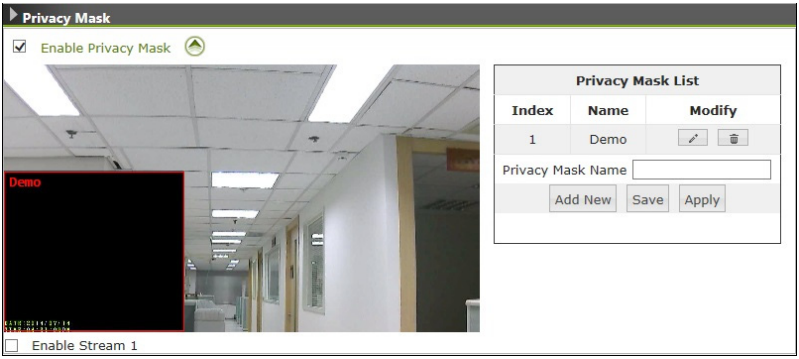


The camera supports OSD (On Screen Display) which means stamping text information on the video image. The options of the date/time string or/and a line of text message (e.g. camera name or location) are available for displaying on the images. Also, the transparent percentage of the OSD background could be adjustable.



For the user define text OSD, it supports ASCII and UTF-8. ASCII text includes only limited standard characters, and UTF-8 fits for those applications which need OSD with multiple language OSD support. UTF-8 works on IE8 or above, chrome, and Firefox.

Privacy Mask

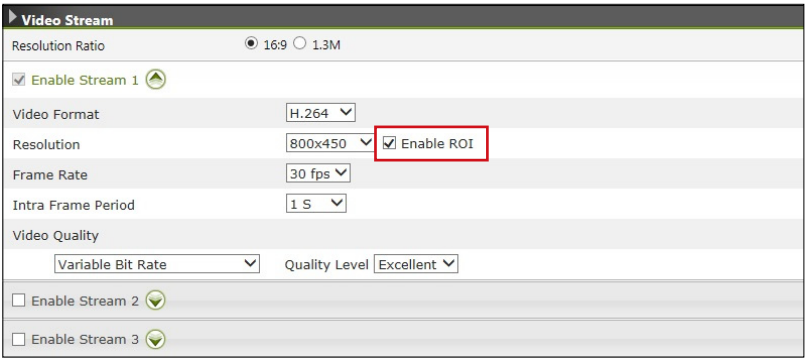


Privacy Mask can block out the specific areas from view. The blocked areas will not be seen in both live view and recorded video clips and the total of 8 profiles can be created to the list.

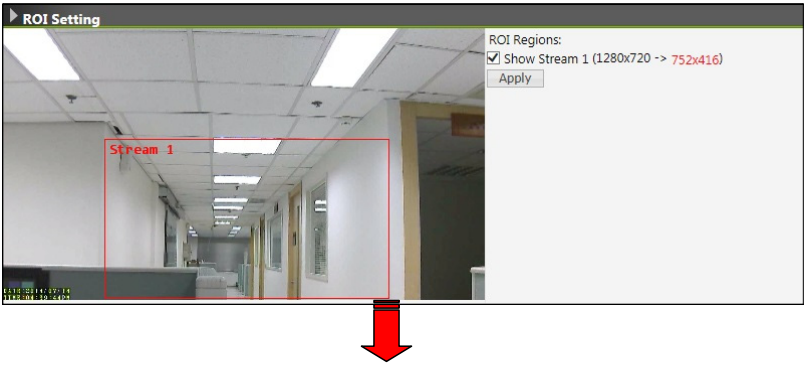
To create Privacy Mask, simply input Privacy Mask Name and click "**Add New**" button and then apply it to complete the addition.

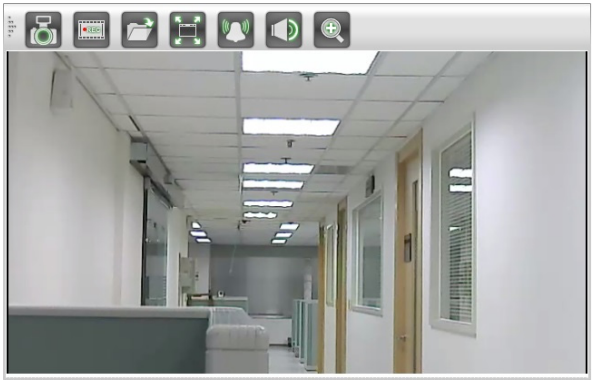
ROI(NCB750, NCR770 and NDR720 Excluding)

The checkbox of "Enable ROI" under Video Setting page should be clicked before active the function of ROI.



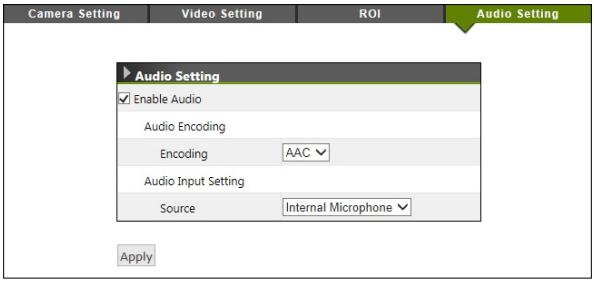
Region of interest that users could determine the region what would be monitored. To drag any corner of red rectangle to resize the window and the modified video resolution will be shown on right side in red.



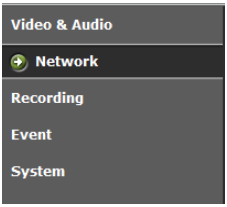


Audio Setting (NCR770 and NCR772 Excluding)

Check the "Enable Audio" checkbox to enable the video streaming with audio. The audio encoding supports G.711 ulaw and AAC. For Audio Input Setting, the input source can only be Internal Microphone.



4. Network Configuration

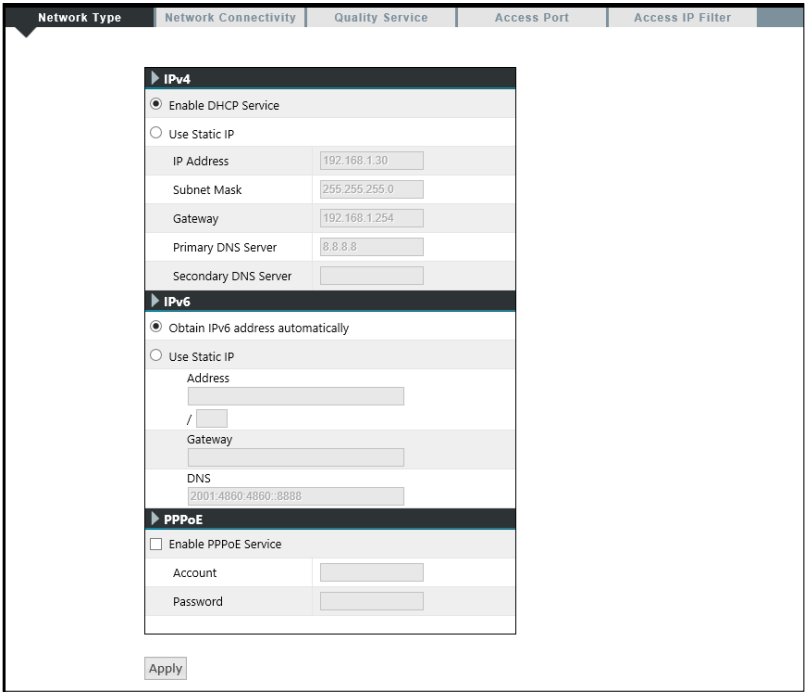


The IP Camera acts as one of the network devices. It allows user to configure the network functionalities based on applications. This section will describe the network configurations.

The subdirectories in "Network" are:

- **Network Type**
- **Network Connectivity**
- **Quality Service**
- **Access Port**
- **Access IP Filter**

Network Type



Network Type

There are 3 ways to configure address for the IP camera device, including **DHCP**, **Static IP** and **PPPoE**.

Enable DHCP Service: The default setting is DHCP, which camera will be automatically given an IP address (IPv4/IPv6) in a network with DHCP server.

Use Static IP: Camera may also be manually assigned with a static IP address (IPv4/IPv6). Subnet mask, Gateway and DNS server(s) will also need to be specified for certain network function properly executed.

Enable PPPoE Service: This service is usually provided by an ISP (Internet Service Provider). IP Camera can establish a dial-up connection to the ISP and then get connected to Internet. (Only IPv4)

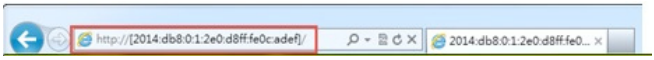
NOTE1:

To connect camera with IPv6 address, please note that this only works if the network environment and hardware equipment support IPv6. The browser should be Microsoft® Internet Explorer 6.5, Mozilla Firefox 3.0 or above.

NOTE2: (Link with IPv6 address as following steps)

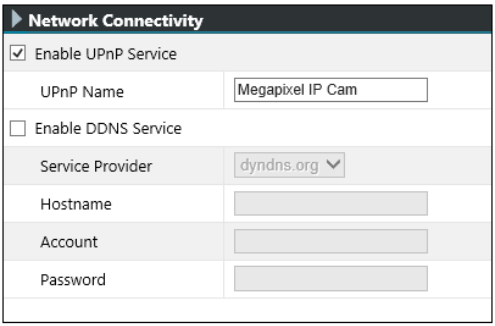
1. Go to Setup -> System -> System Information page (under IPv4) to know the IPv6 address
2. Open web browser and input the IPv6 address in the address bar.
3. The format should be: **http://[2014:db8:0:1:2e0:d8ff:fe0c:adef]/**
4. Press Enter key to open the Live View page of camera.

   For example



Network Connectivity

This page provides the connectivity configuration, so that IP camera can be accessed without necessarily providing the numerical IP address.



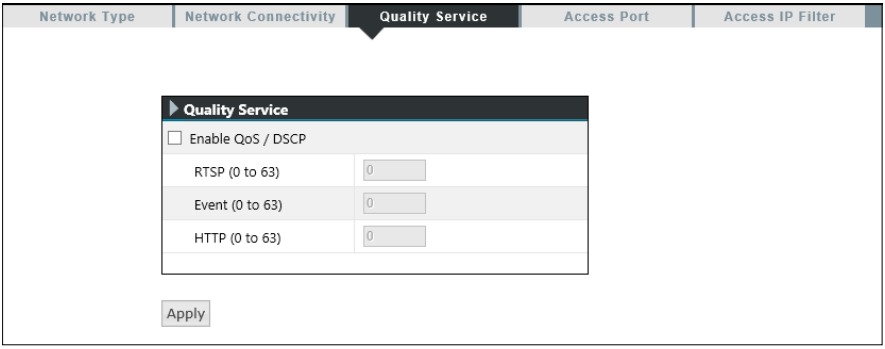
Enable UPnP Service: with UPnP enabled, IP camera device can be easily discovered in Windows Network (My Network Places). See "Discover devices in Windows Network" in previous section.

Enable DDNS Service: By registering this sort of service, camera can be assigned and accessed over Internet with a hostname instead of IP address. To enable the services, visiting the website of the service provider and registering an account are required.

Dyndns.org: http://www.dyndns.com/

Quality Service

Quality Service provides network traffic management to guarantee the quality of services in higher priority, especially when network is insufficient. DSCP (Different Service Code Point) is a 6-bit IP header which defines the service level of the packet. According to the DSCP value, routers with PHB (Per-Hop Behavior) will define a specific class of traffic for the packet, in terms of bandwidth, latency, or loss rate, etc. Enable QoS and set DSCP value for the service to ensure its quality to be maintained.

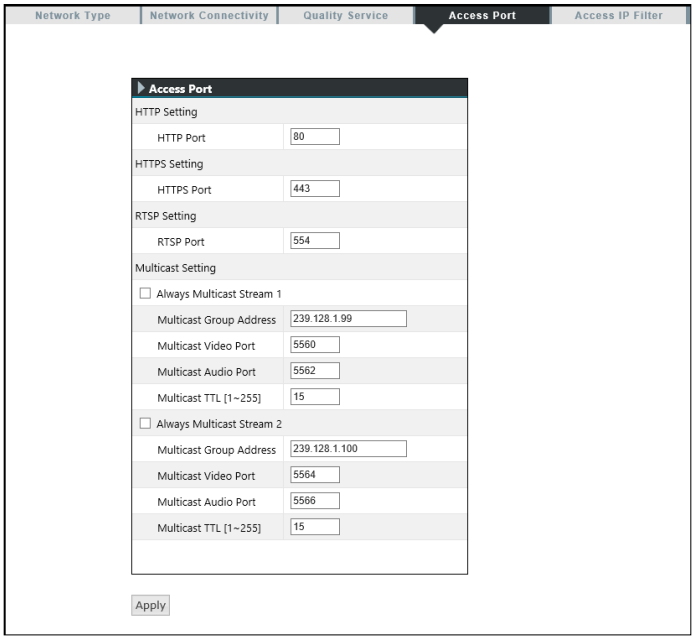


NOTE:

To make the QoS function work, all the switches and routers in the network must support QoS.

Access Port

This page provides the ports configuration for requesting the services from the camera device. These services include Web Page access, HTTP and RTSP streaming services.



HTTP port / HTTPS port: By default, the HTTP and HTTPs ports are set to 80 and 443 respectively. They can also be assigned to another port number between 1025 and 65535.

The HTTP port is basically provided for device's webpage access. When the video format is set to MJPEG, user is able to retrieve the live video via HTTP URL, e.g.

Http://<ip_address>/operator/get_video.cgi?channel=[1, 2] , where channel is to specify stream1 or stream2

RTSP port: RTSP (Real-Time Streaming Protocol) is used to control the live media streaming. This port is provided to request the streaming service. By default, the port number is set to 554. It can also be assigned to another port number between 1025 and 65535.

Multicast: Multicast is a streaming method with bandwidth conserving technology. By delivering a single video stream to multiple network clients, the bandwidth utilization can be reduced.

Select the Always multicast option to enable multicast for stream 1 ~ 2.

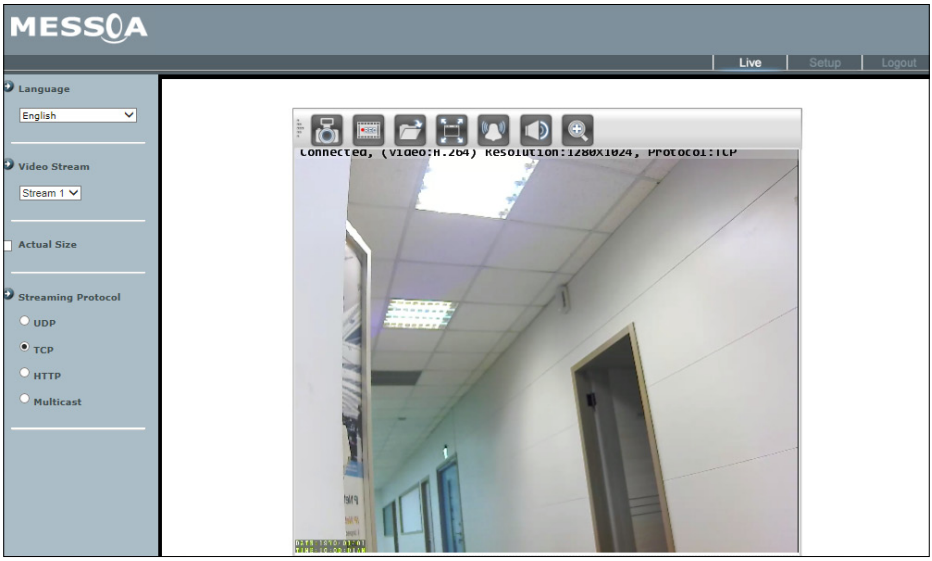
Multicast Group Address – Set the IP address for multicast streaming. The Multicast IP address must be in the range from 224.0.1.0 to 239.255.255.255.

Multicast Ports – Set the port for multicast streaming.

Multicast TTL – The multicast Time-To-Live (TTL) gives the range of routers that multicast traffic can pass through in the networks.

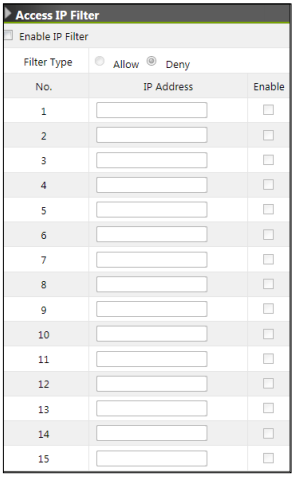
NOTE:

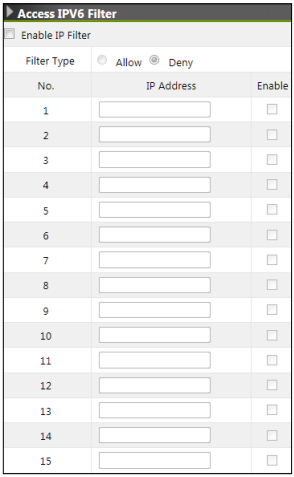
The multicast stream can be triggered by a network client (e.g. choosing "Multicast" from the live view page) whereas "Always Multicast" option is not enabled. This mechanism is known as "Multicast On Demand". In this mode, multicast stream starts when one or more clients request. It stops automatically when the last client leaves the multicast group. "Always Multicast", on the other hand, starts or stops multicast stream by enabling/disabling this function. It doesn't matter whether there is client request or not.



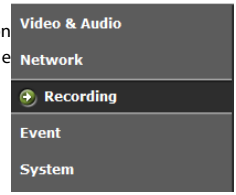
Access IP Filter

This setting also provides a basic security by filtering the accesses from other hosts. Enable this function and choose "Allow / Deny" of the listed IP addresses. Up to 15 IP address can be added in the list for IPv4 and IPv6.





5. Recording

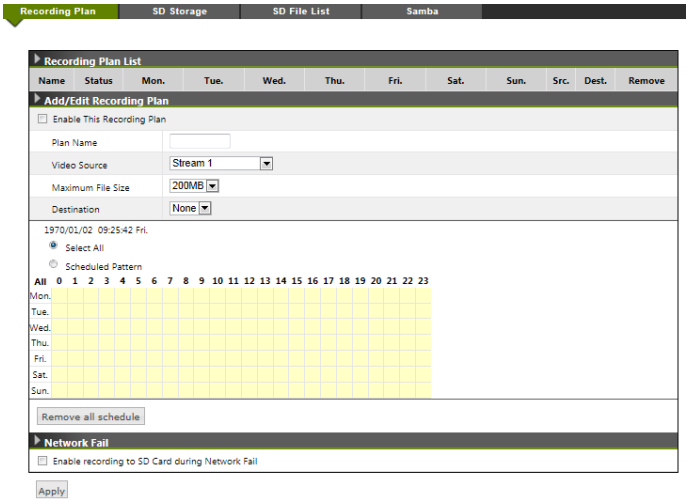


This section provides the recording configuration on the camera. Unlike the recording function (Quick Functional Button) on the live view page, video can also be recorded to the storage attached to the local network storage (Samba) according to a time based schedule.

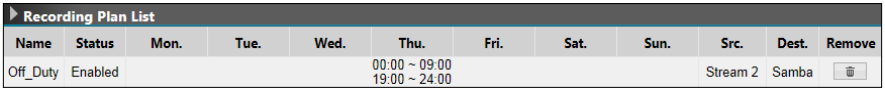
The subdirectories in the "Recording" category are:

- **Recording Plan**
- **SD Storage (For NCB750, NCB752 and NDR721)**
- **SD File List (For NCB750, NCB752 and NDR721)**
- **Samba**

Recording Plan



Recording Plan List


Recording Plan List
Name Status Mon. Tue. Wed. Thu. Fri. Sat. Sun. Src. Dest. Remove
Off_Duty Enabled 00:00 ~ 09:00 19:00 ~ 24:00 Stream 2 Samba

It lists the created/scheduled recording plan(s). The details of a recoding plan include:

Plan Name: Identifier of the recording plan

Status: Enable or Disable the recording plan

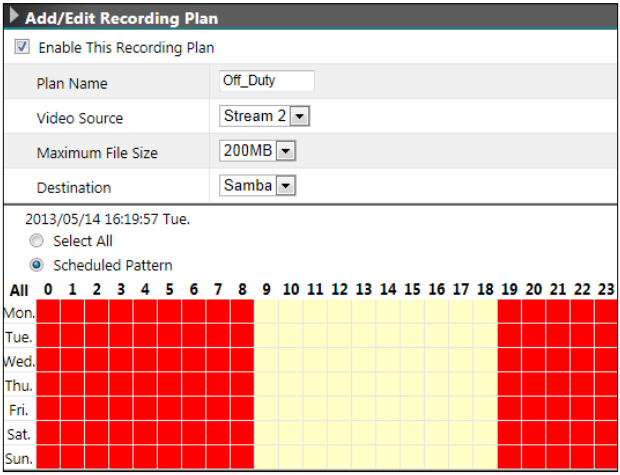
Mon ~ Sun: Displays the hours in days of a week that recording is effective

Src. (Source): The video source selected to be recorded

Dest. (Destination): The stored path for the recording file

Remove: Click to delete this recording plan.

Add / Edit Recording Plan



Plan Name: Identifier of the recording plan

Video Source: The selection of the video source to be recorded. Options: Stream1 / Stream 2 / Stream 3 for NDR721 and Stream1 / Stream 2 for others.

Maximum File Size: This option defines the maximum file size of each video clip.

Destination: The stored path for the recording file

Select All: 24 hrs/ 7days (Mon-Sun) continuous recording

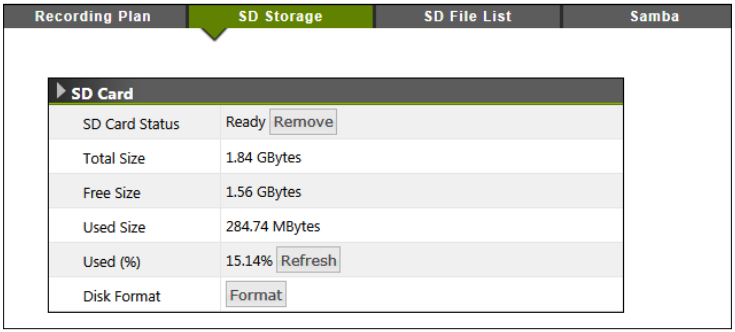
Scheduled Pattern: User-defined time frame

Network fail (Only for NDR721)

The user could checked the check box to enable recording to SD card upon the condition of network failure

SD Storage (For NCB750, NCB752 and NDR721)

This page shows the SD card information when it is attached to the IP camera.



Normally, inserting the micro SD card will be done before entering this page and obtain the card information as below. However, if it is the other way around, click SD storage tab to refresh it.

SD Card Status:

- **Syncing:** Display when the card database is in the process of synchronization
- **Ready:** Display when the micro SD card has been detected successfully is in a ready state
- **Detached:** Display when there is no micro SD card detected
- **Recording:** The micro SD card is being recording recorded
- **Remove button:** Remove the micro SD card
- **Mount button:** Mount the micro SD card

Used (%): Display the used space in percentage. Click Refresh button to obtain the up-to-dated value

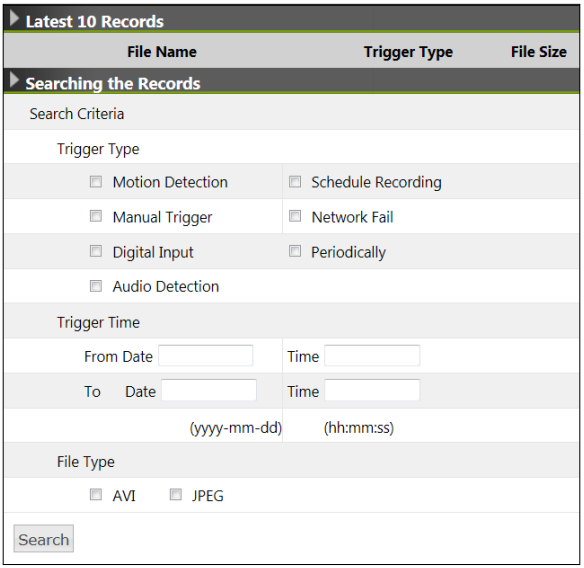
Disk Format: Click Format button to format the micro SD card

NOTE:

1. It is recommended to insert the micro SD card before powering up the system. This is to ensure that the attached device is properly detected in the initial stage.
2. When the card storage is full, the system will automatically launch overwrite process from the earliest recording files.

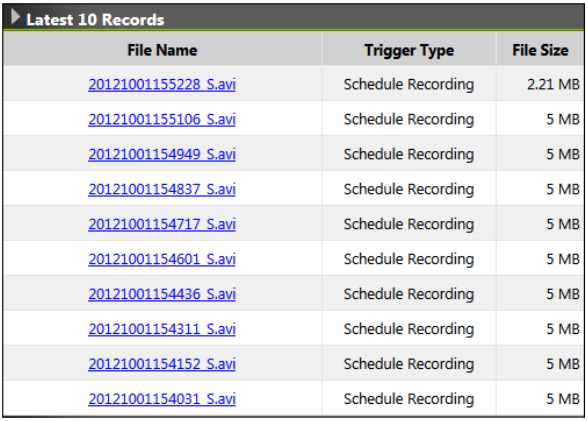
SD File List (For NCB750, NCB752 and NDR721)

This page provides the search of records. The SD storage may contain both "**triggered-by-schedule**" recordings and "**triggered-by-events**" snapshot / video. There are search conditions used to narrow down the search results.



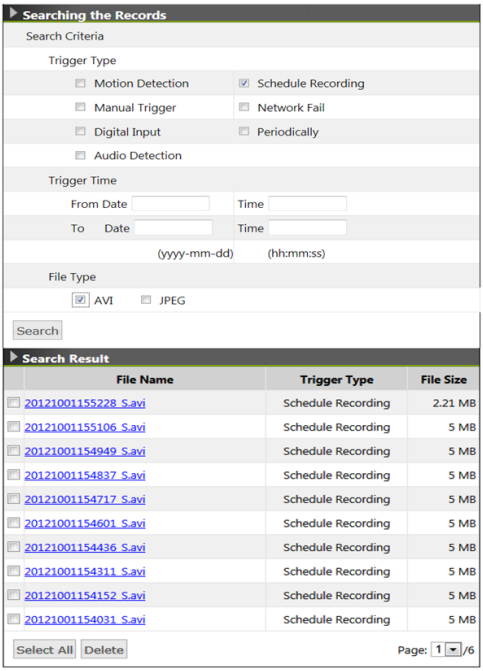
The latest 10 Records

The most recent 10 records are listed in this table. Each record name is a link to view this video or image. Following the "Record Name", each record is listed with its "Trigger Type" and "Record Size" details



Searching the Records

The SD storage would keep massive records after the "**recording plan**" and/or "**event handling**" (see ***Event Management***) has been launched. The search criteria are provided to look for particular records in the SD card.



Example:
Trigger Type – Schedule Recording

There are 3 categories of search criteria:

1. **Trigger Type:**

   It includes Motion Detection, Digital Input, Manual Trigger, Network Fail, Audio Detection and Periodically as the type of "triggered-by-events" and Schedule Recording as the type of "triggered-by-schedule".

2. **Trigger Time:**

   Input Date / Time duration that recording was created.

3. **File Type:**

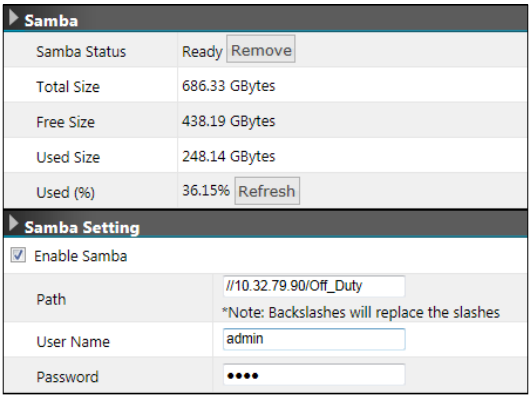
   Select the file type that is either video clips (.avi) or pictures (.jpeg) or both.

NOTE:

The search criteria can be multiple selected for each searching. For instance, the search result can be the combination of Network Fail and Digital Input.

Samba

This page allows user to configure the file storage via Samba. To begin with it, click Enable Samba and then input the related information.

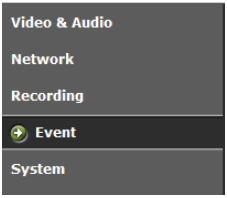


NOTE:

Samba can only support mounting a shared folder located in the root directory. For example, to mount a folder called "Shared" can be input the path as below.

\\<IP>\Shared

6. Event Management



Event management describes the handling of events with the corresponding actions. A common case can be exampled is storing a captured image to a local storage (Actions), when there is a Motion Event (Trigger Condition). This chapter gives the configurations of **Triggers** (what to detect?) and **Actions** ("what to send" and "where to send"). A time based schedule can also be applied.

Configuration of Event Handling

There are several subdirectories in the "Event" category. These configuration groups are correlated. A completed event setting may need to configure each part in sequence.

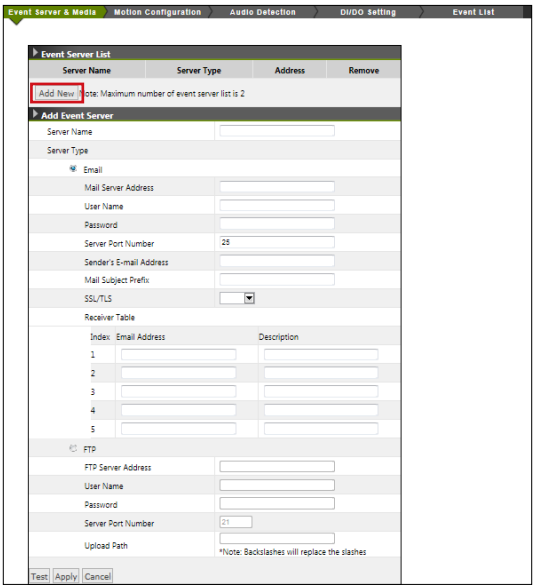
- **Event Server & Media**
- **Motion Configuration**
- **Audio Detection (For NCB752, NDR721 and NDR722)**
- **DI/DO Setting (For NCB750, NCB752 and NDR721)**
- **Tamper Detection (For NDR722, NCB752 and NCR772)**
- **Event List**

Event Server & Media

The "Event Server" is the configuration of "where to send", e.g. FTP server, while Media is the sending file type. The combination of file type and the remote servers will then be applied as an event action.

Event Server List

Click on "Add New" button to add the remote servers. These are email recipients and FTP server.



Server Name: Identifier of the event server

Server Type

Email: Send the media file via email when an event is triggered.

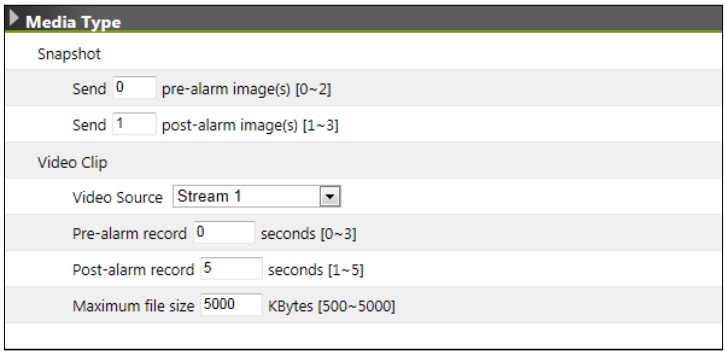
- **Mail Server Address:** Enter a host name or IP address of the email server.
- **User Name:** Enter the user name of the email account.
- **Password:** Enter the password of the email account.
- **Server Port Number:** Enter the server port of the mail server. The default is 25.
- **Sender's E-mail Address:** Enter the email address of the sender
- **Mail Subject Prefix:** Enter the subject description for the mail.
- **SSL/TLS :** Select None/SSL/TLS for secure the mail transmission
- **Receiver Table:** Enter the recipients' email address. The mail can be sent to up to 5 recipients.

FTP: Send the media file to a FTP server when an event is triggered.

- **FTP Server address:** Enter the FTP server's address.
- **User Name:** Enter the user name of the FTP login account.
- **Password:** Enter the user name of the FTP login password.
- **Server Port Number:** Enter the server port of the FTP server. The default is 21.
- **Upload Path:** Enter the file path that files will be sent to.

Media Type

There are 2 types of media (file) available, snapshot (.jpg image) and video clip (.avi).



Video Source: Select the video source to be captured

Pre-alarm / Post-alarm image(s): Enter the numbers of images that will be captured before and after trigger is activated.

Pre-alarm / Post-alarm record: Enter the numbers of seconds that video will be recorded before and after trigger is activated.

Maximum file size: Define the maximum file size that a video clip is generated.

Motion Configuration

There are three MD (Motion Detection) areas can be enabled. Each MD can be individually enabled/disabled, defined the covering range and trigger sensitivity.

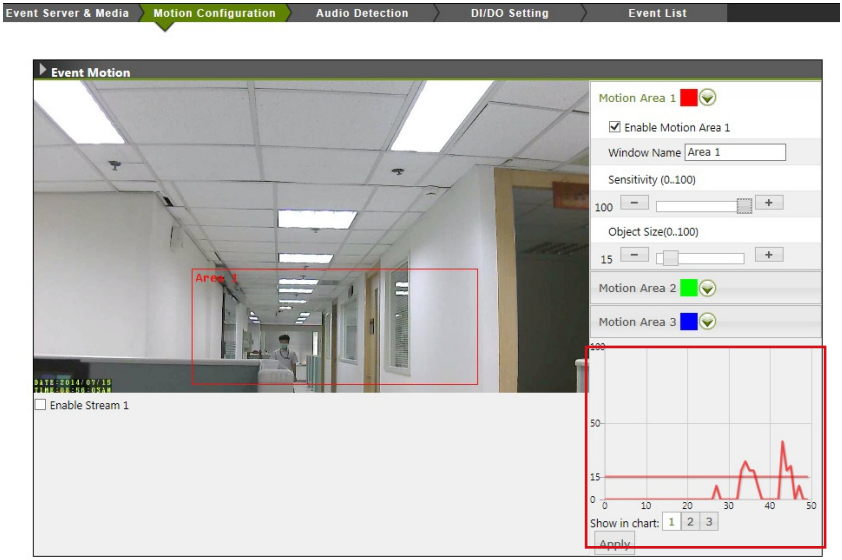
To enable and verified the MD, follow the steps provided below.

1. Check the box to enable the motion area
2. Drag and drop to move the motion window
3. Hold and drag any corner of the rectangle to resize the window.
4. By dragging the pin of the slider bars, adjust the detection "Sensitivity" and "Object Size" of the rectangle covered area.

NOTE:

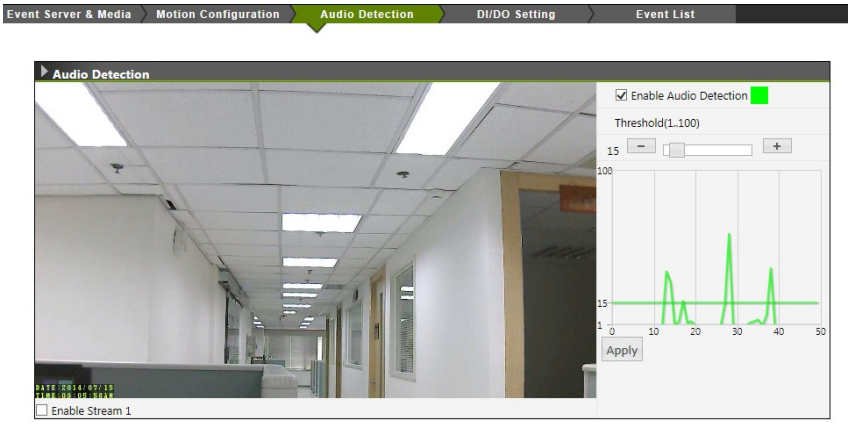
By name implying, the "**Sensitivity**" setting means the sensitivity level to the motion detection; the higher value given makes the motion window more sensitive to the moving object. "**Object Size"** stands for the percentage threshold of moving object size verse motion window size. For example, the "**Object Size**" set as 50 that means the "size of detected moving object" must larger than 50% of the motion window to trigger the motion event.

5. The status chart shows the motion activities. When the motion vector exceeds a threshold (the Object Size), the motion trigger is activated. The index number of "Show in chart" reflects the number of Motion Area.
6. To enable other motion area, repeat above steps.
7. Click on "Apply" button to save the settings.



Audio Detection (For NCB752, NDR721 and NDR722)

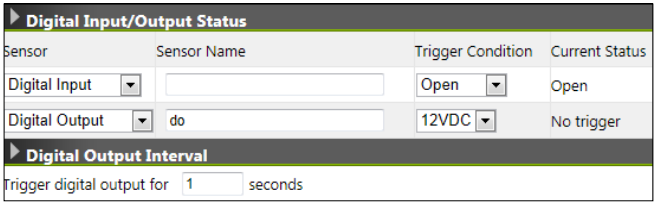
Checked the box of Enable Audio Detection, users may enable audio detection function to detect the monitoring area whether any abnormal sound over the threshold existed. This could be an event source to trigger event notification and alarms.



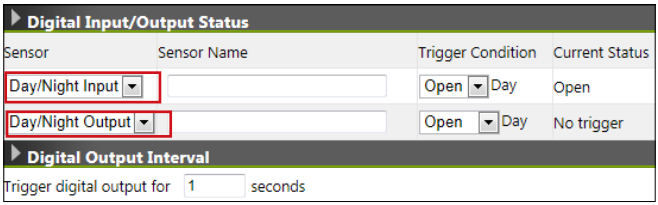
DI/DO Setting (For NCB750, NCB752 and NDR721)

The DI/DO setting provides the function of Digital I/O's trigger condition configuration and current status information. The trigger condition can be configured while current status is detected by the IP camera system.

Digital input (DI) can be configured as Open Trigger, Close Trigger, or disable. When its current status fits the trigger condition, the trigger is activated. Digital output (DO), can be one of the responding actions, when event it triggered, the DO will change output from Open to 12VDC when Trigger condition configured as 12VDC.

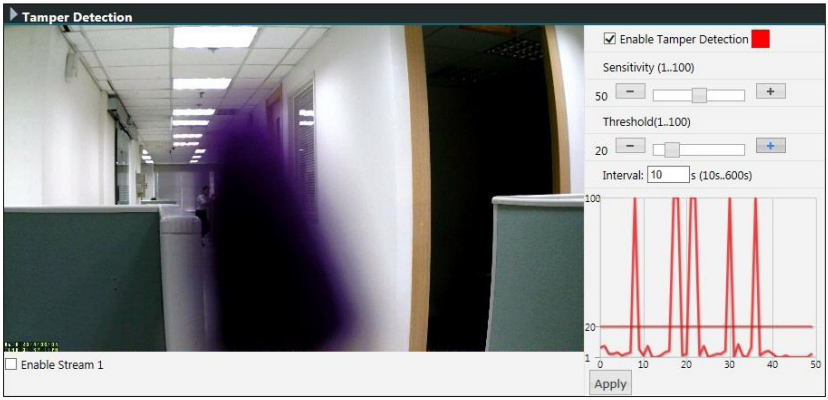


The DI could also be configured as camera Day/Night mode switch input to synchronize with Day/Night signal output from an external illuminator or an external light sensor. And, DO could also output camera Day/Night status while configured as Day/Night Output, which could used to control an auxiliary illuminator.



Tamper Detection (For NCB750, NCB752 and NDR721)

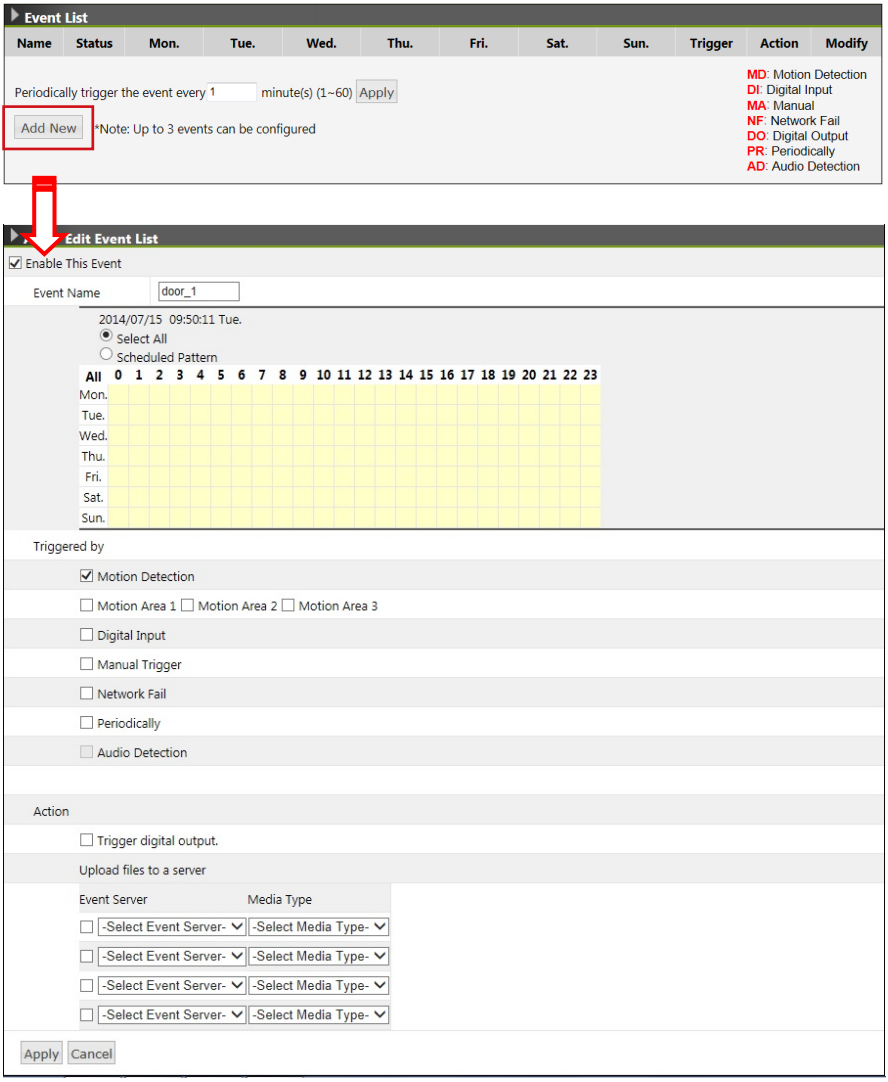
With tamper detection, the camera is capable to detect tampering and could be event source to trigger event notification and alarms.



Event List

List a summary of configured events. That is the selection of trigger condition(s) and the corresponding actions, as well as the scheduling.

To begin with it, click on "Add New" button to extend for the detailed configurations.



Event Name: Enter an event name, e.g. Motion Detection, to identify this configured event.

Select All: 24 hrs/ 7days (Mon-Sun) continuous recording

Scheduled Pattern: User-defined time frame

Triggered by: This describes the selection of trigger conditions which include:

- **Motion Detection:** Select the motion detection area(s) used for trigger condition. To enable and configure the motion detection areas, go to ***Motion Configuration.***
- **Digital Input:** Enable the system to detect the DI (Digital Input) status as a trigger condition. For more details about the DI setting, go to ***DI/DO Setting*** if the mode support.
- **Manual Trigger:** Enable the system to detect the user input action (press the alarm button, on the live view page).
- **Network Fail:** Enable the system to detect the network connection status.
- **Periodically:** Enable the system to perform the set Action periodically.
- **Tamper Detection:** Enable the event to detect the tampering event.
- **Audio Detection:** Enable the event to detect the audio event.

Action: The selection of responding actions

- **Digital output:** Check the box to enable the digital output as a responding action. For detailed configurations, go to ***DI/DO Setting***.
- **Upload files to a server:** There are two drag-down selections, Event Server and Media Type. The Event Server indicates the file destination such as local network storage Samba, and the file type includes snapshot image and video clip. For the snapshot / video clip configurations, go to ***Event Server & Media***.

NOTE

The dependency of ***Event Server*** and ***Media Type*** is described as below.

- When ***Event Server*** is either Samba or SD card, the selection of ***Media Type*** will be either Image or Video
- When ***Event Server is*** either Mail or FTP, the selection of ***Media Type wil***l only be image

Examples of Event Handling

The following cases are provided as the examples of Event Handling.

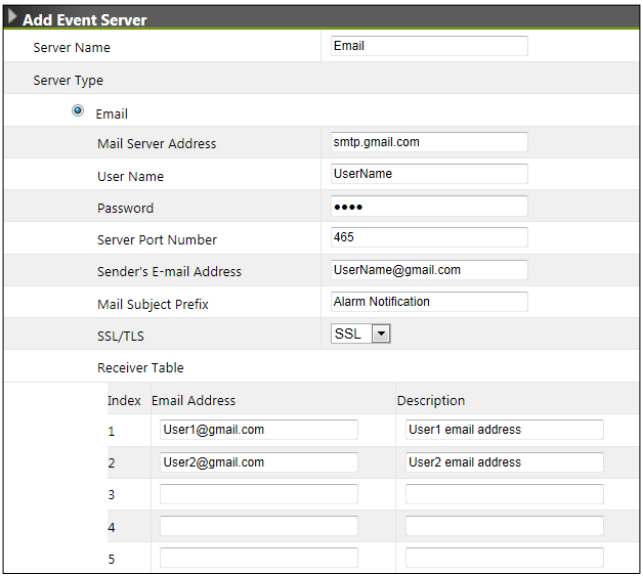
Scenario 1

While viewing live video, user can manually trigger an event anytime simply by pressing the button, on the web page. It will send email to the specified email accounts with the captured pictures.

The configurations are illustrated as below:

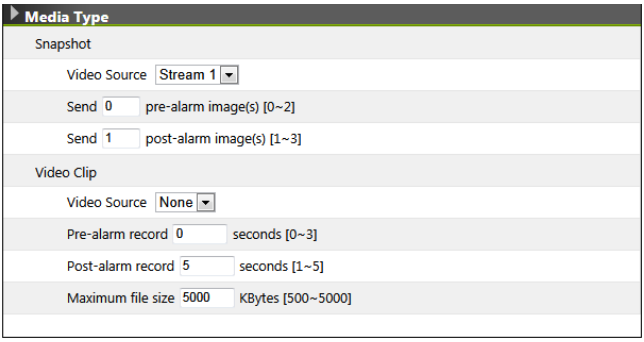
Step 1: Add Event Server

- Go to ***Event*** → ***Event Server & Media*** → ***Event Server List***
- Click on **"Add New"**
- Choose **"Email"** and fill in the email server and recipients' information.



Step 2: Configure Media Type

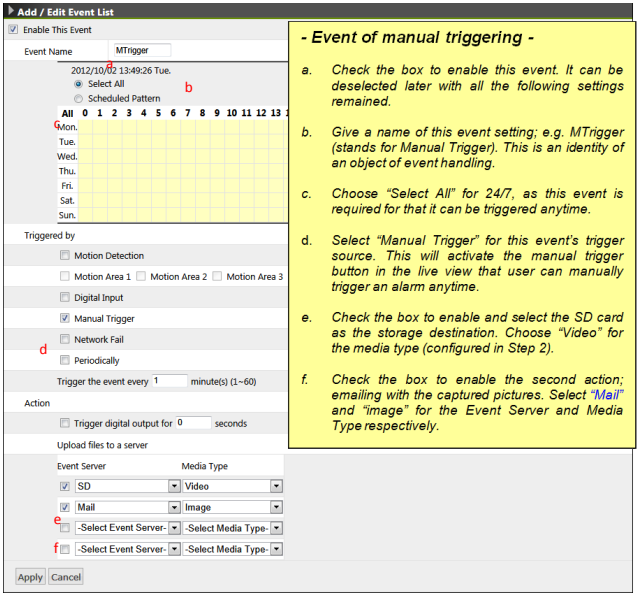
- On the same web page, configure the Media Type. For the following example, the system is configured to capture 1 picture before (pre-alarm) the event and 2 pictures for the event and after (post-alarm). For video clip, pre-alarm and post-alarm could be configured for event video record.



- Click on "Apply" to save the email server and media settings.

Step 3: Configure Event List

- On Event List page, click on "Add New" button.
- Enable and configure this event


Add / Edit Event List
Enable This Event
Event Name MTrigger
Select All
Scheduled Pattern
Triggered by
Motion Detection
Motion Area 1 Motion Area 2 Motion Area 3
Digital Input
Manual Trigger
Network Fail
Periodically
Trigger the event every 1 minute(s) (1~60)
Action
Trigger digital output for 0 seconds
Upload files to a server
Event Server Media Type
SD Video
Mail Image
-Select Event Server- -Select Media Type-
-Select Event Server- -Select Media Type-
Apply Cancel
- Event of manual triggering -
a. Check the box to enable this event. It can be deselected later with all the following settings remained.
b. Give a name of this event setting; e.g. MTrigger (stands for Manual Trigger). This is an identity of an object of event handling.
c. Choose "Select All" for 24/7, as this event is required for that it can be triggered anytime.
d. Select "Manual Trigger" for this event's trigger source. This will activate the manual trigger button in the live view that user can manually trigger an alarm anytime.
e. Check the box to enable and select the SD card as the storage destination. Choose "Video" for the media type (configured in Step 2).
f. Check the box to enable the second action; emailing with the captured pictures. Select "Mail" and "image" for the Event Server and Media Type respectively.

- Click on "Apply" to save the settings of this page.

Scenario 2

A user is to define the motion detection area(s) in the camera view. When someone goes across these areas, the camera is aware of the trigger activated and starts generating video clips to the SD card if the camera support local storage. Meanwhile, an illuminator device attached to the camera will be lighted up. This detection should be activated from 22:00 to 08:00 every day.

The configurations are illustrated as below:

Suppose that the required media type is previously configured. That is the 7 seconds video clip configured in Scenario 1.

Step 1: Define the motion area

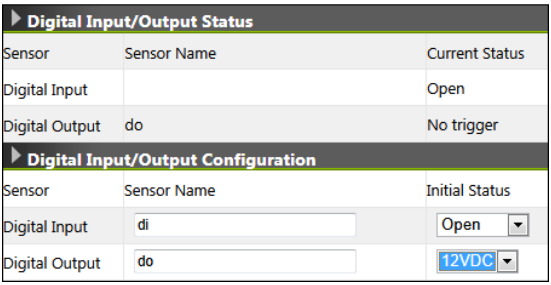
- Go to ***Motion Configuration*** page, and define the MD area.

Step 2: Configure DI/DO setting

- Go to ***DI/DO Setting*** page to set up the "Initial Status" of the digital output.

NOTE

The "Initial Status" is the normal state (no event triggered) of the DO pins. In the case, suppose that the connected illuminator can be driven by DC12V. The initial status should then be set "Open". When a motion event is detected, camera changes the output status to "12VDC". The illuminator is then lighted up.

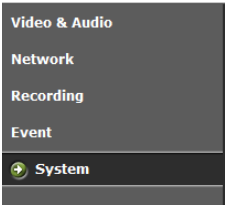


Step 3: Configure Event List

- Go to ***Event List*** page. Click on "Add New" button.
- Enable and configure this event
- Click on "Apply" button to save the settings of this page.

7. System Options

System Options provide users to obtain and configure the system settings of the IP camera system. It contains the page of **System Information, Date and Time, User Management, Maintenance** and **Log Service**. The details about each subcategory will be described as below.

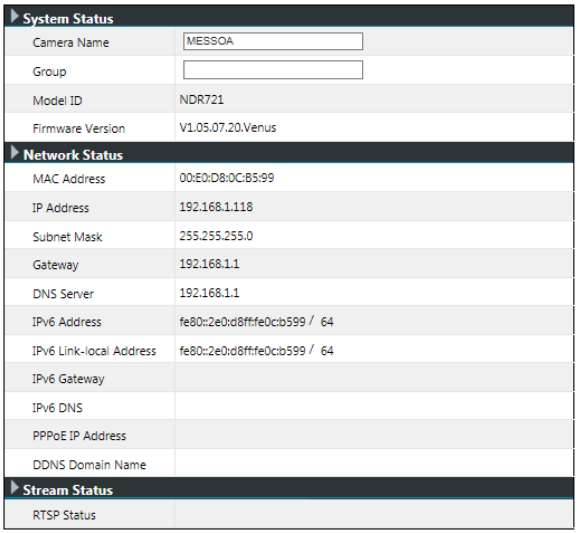


System Information

The page gives the general information of the IP camera system.

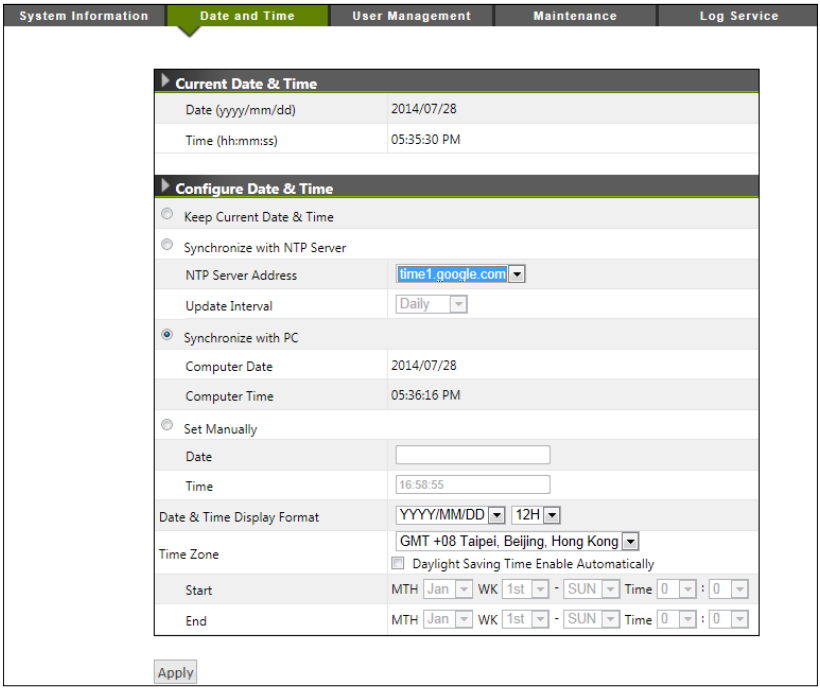
In **System Status**, the Model ID, Firmware Version and MAC Address are listed. The Camera Name and Location fields are revisable to identify a unit among multiple cameras installed.

The IP address information of this IP camera is listed in **Network Status**. The RTSP Status field shows the video stream(s) being requested by the listed client(s).



Date and Time

This section describes the date/time adjustment for the IP camera system. The ways to adjust the IP camera's date/time can be Synchronize with NTP Server, Synchronize with PC or Set Manually.



Current Date & Time

Display current system date/time of the IP camera. The date format can be changed from the drop-down list under ***Configure Date & Time.***

Configure Date & Time

Keep Current Date & Time: The option of keeping current date and time, not to be adjusted.

Synchronize with NTP Server: Automatic date/time adjustment. The IP Camera must be able to access to the given NTP server.

NOTE: To apply "synchronize with NTP Server", a **Time Zone** must be selected for referencing to the local time.

Synchronize with PC: The PC linked to the web page of the IP camera can also be a date/time synchronizer. However, if the PC is linked from a **time zone** which is different from the one where camera is installed, the web page will pop up a warning message for time zone difference.

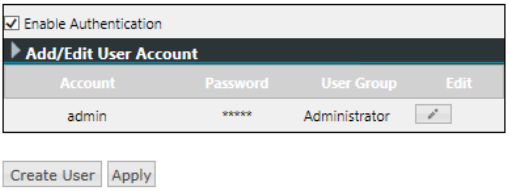
Set Manually: Manually adjust the date / time.

Date & Time Display Format: The system date can be displayed in the format of DD/MM/YYYY, MM/DD/YYYY or YYYY/MM/DD. The system time can be displayed in the format of 12H or 24H

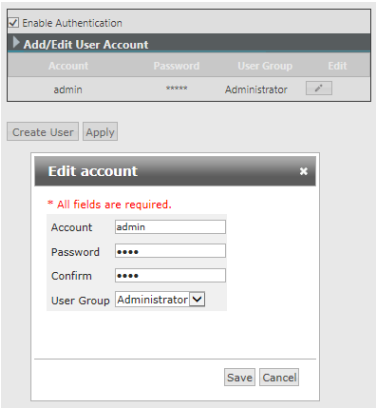
Time Zone: Select an appropriate time zone for local where IP camera is installed. The automatic adjustments will be applied based on the selected time zone. Click the "**Daylight Saving Time Enable Automatically**" checkbox to enable the daylight saving function and user could select the day light saving start time and end time based on the DST rule where camera installed.

User Management

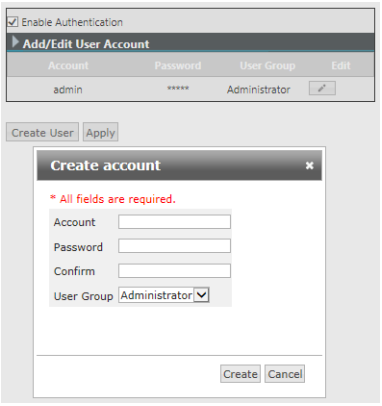
By default, the access to the camera is not user authenticated. For security, the IP camera should be restricted only authenticated accounts to access. It is able to enable/disable user accounts, as well as to manage the added users in this page.



Initially, there is a default account, Admin in the "User List". To enable this account, click on "Enable Authentication" and then apply. To edit password for the default account, click "Edit" to enter the configuration window.



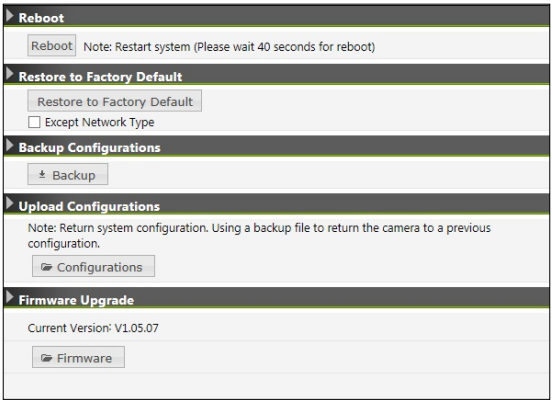
To create a new account, click "Create User" button. Enter Account / Password for this account with the group type on the "Create account" window.



The user account with "**Administrator**" authentication can do all the configurations. "**Operator**" has the same rights as Administrator, except for **User Management**. "**Viewer**" is allowed only the access to live view page. Up to 8 user accounts can be added in the User List.

Maintenance

This page provides tools for camera system maintenances.



Reboot: Restart the camera system

Restore to Factory Default: Restore camera factory default settings. The network setting can be kept by checking the "**Except Network Type**" checkbox.

Backup Configurations: The system settings can be backed up and exported to a file. The file can be applied to upload the previous user settings to the camera, or other cameras.

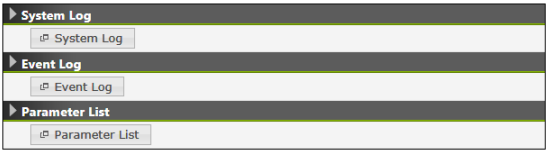
NOTE:

The backup file can be applied to other IP cameras, so users won't need to configure each device. It is recommended to switch the IP setting to DHCP mode before exporting the backup file. Otherwise, all IP cameras will have the same IP address.

Firmware Upgrade: There may be new released firmware for features update or issues fixed. To upgrade the firmware for the system, retrieve the firmware image file, import to the system and then do the upgrade process.

LOG service

The system operations and / or process will be recorded in the log system. The link provides the review of these records.



System Log: It contains records of system changes such as login failed or link on/off.

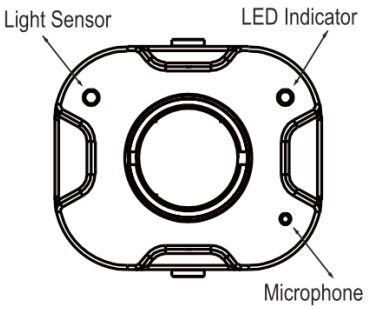
Event Log: It records the log message of triggered event, for instance, motion detection is asserted.

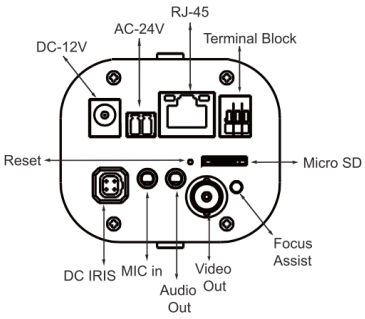
Parameter List: It lists all the system parameters with the current value.

8. Connectors & LED

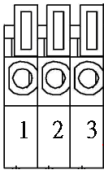
NCB750 & NCB752

Front and Back Panels



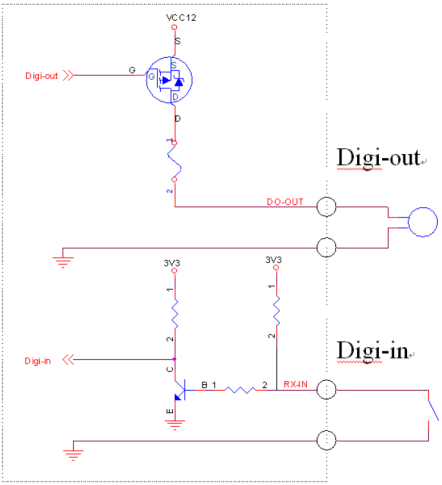


I/O connectors – Pin definitions



Pin	Signals	Function
1	RX-IN	Digital Input
2	GND	Ground
3	DO-OUT	Digital Out

Schematic diagram of Digital I/O



LED Indicators

There are 2 type of LED indicators; RJ45 LEDs (back panel) and System LED (front, bicolor). These LEDs can help to recognize the current device status.

RJ45 LEDs for Network Status:

	LED1 (Green)	LED2 (Amber)
10 Link / Traffic	Steady ON / Flashing	OFF
100 Link / Traffic	Steady ON / Flashing	Steady ON

Bicolor LED indicator for Power & System Status:

	Green
Power On / System Reboot	Steady ON with Amber LED
Initial Process Ready	3 Flashing then ON with Green LED
Normal Operation	Steady ON with Green LED
Firmware Upgrade	Flashing per second with Red LED
Internal (Hardware) Failure	Steady ON with Red LED

NCR770 & NCR772

Cable connectors

LED Indicators

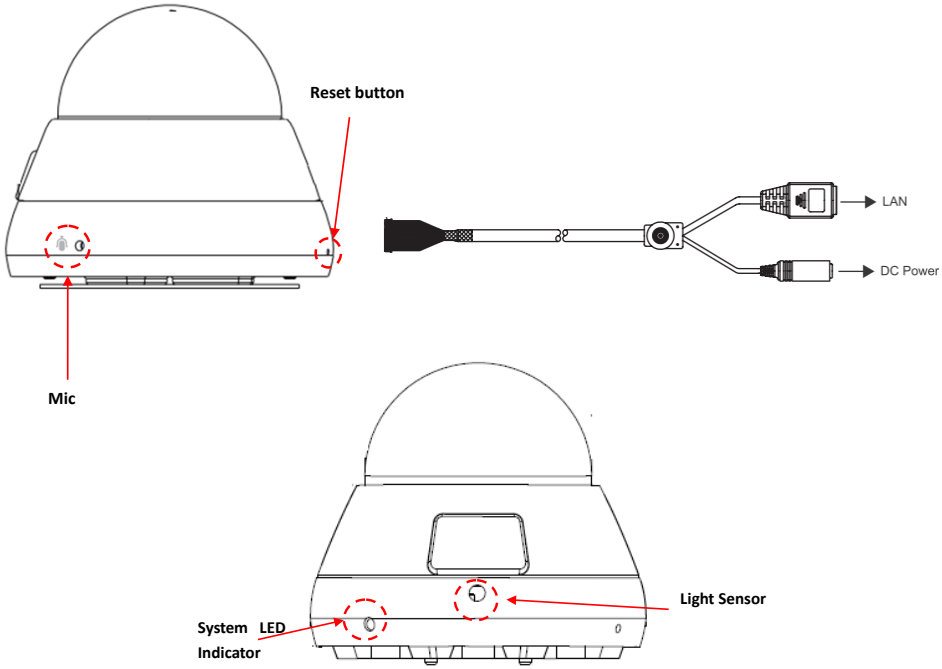
There are 2 type of LED indicators; RJ45 LEDs (back panel) and System LED (front, bicolor). These LEDs can help to recognize the current device status.

RJ45 LEDs for Network Status:

	LED1 (Green)	LED2 (Amber)
10 Link / Traffic	Steady ON / Flashing	OFF / OFF
100 Link / Traffic	Steady ON / Flashing	Steady ON / Steady ON

NDR720 & NDR722

Physical appearance and connectors



LED Indicators

There are 2 type of LED indicators; RJ45 LEDs (back panel) and System LED (front, bicolor). These LEDs can help to recognize the current device status.

RJ45 LEDs for Network Status:

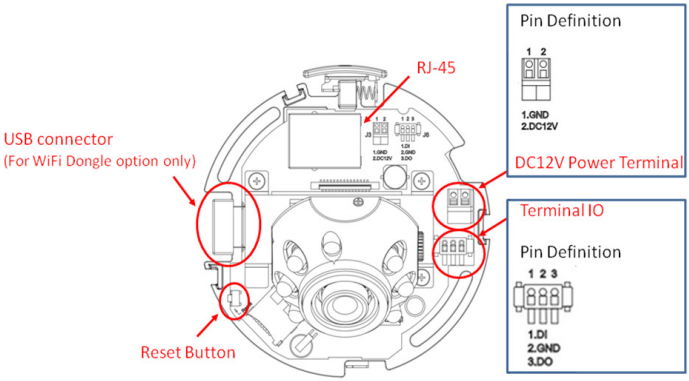
	LED1 (Green)	LED2 (Amber)
10 Link / Traffic	Steady ON / Flashing	OFF
100 Link / Traffic	Steady ON / Flashing	Steady ON

Bicolor LED indicator for Power & System Status:

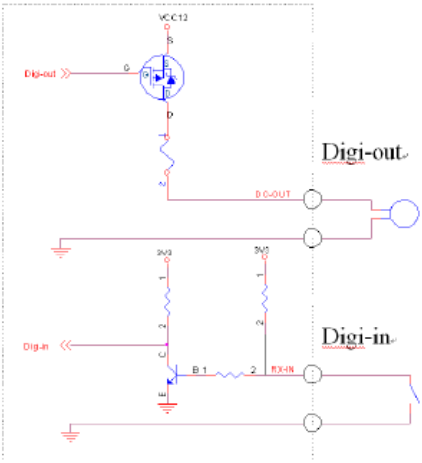
	Green
Power On / System Reboot	Steady ON with Amber LED
Initial Process Ready	3 Flashing then ON with Green LED
Normal Operation	Steady ON with Green LED
Firmware Upgrade	Flashing per second with Red LED
Internal (Hardware) Failure	Steady ON with Red LED

NDR721

Connectors



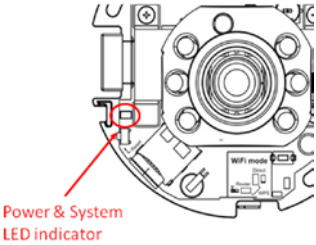
Schematic diagram of Digital I/O



LED Indicators

Bicolor LED indicator for Power & System Status:

	LED
Power On / System Reboot	Steady ON with Amber LED
Initial Process Ready	3 Flashing then ON with Green LED
Normal Operation	Steady ON with Green LED
Firmware Upgrade	Flashing per second with Red LED
Internal (Hardware) Failure	Steady ON with Red LED



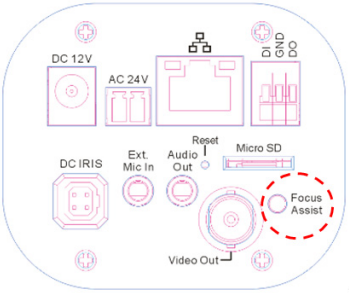
9. Focus Assist Button (For NCB750&NCB752)

Focus Assist Button allows users to adjust the camera focus with precision by a simple click.

[Steps of Process]

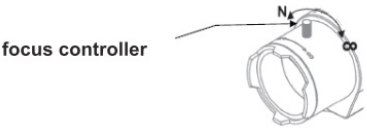
Step 1: "Press" Focus Assist Button

- Rotate the lens focus clockwise or anticlockwise to either end (N or ∞)
- Press and hold the button for 3 seconds until LED indicator flashes from Green light to Amber light.



Step 2: Adjust Focus

- Keep the camera pointing to the same scene during the tuning process
- Start tuning the focus in order to turn the LED Green.
- If LED displays Red light, it indicates the opposite turning direction.



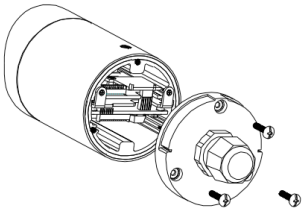
Step 3: Get the Best Focus Value

- When camera gets correct focus, the LED will become Green flashing.
- Remain the camera's pointing direction until the LED becomes steady Green

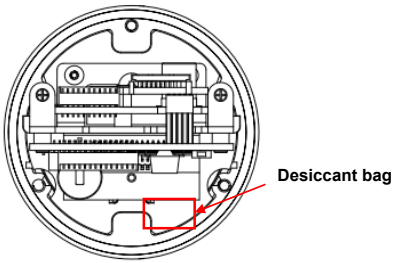
10. Desiccant Bag Replacement (For NCR770&NCR772)

The Camera comes with a desiccant bag placed inside. It is not necessary to replace it until the rear cover of the camera has been opened for some reasons. The SOP is described below for users to complete the replacement.

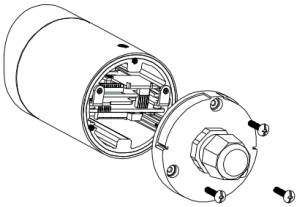
Step 1: Unscrew the rear cover of the camera



Step 2: Carefully open the rear cover and find the location as the red box shown below for installation.



Step 3: Close and screw the rear cover firmly. (M3 screw force: 12kgf / cm2)



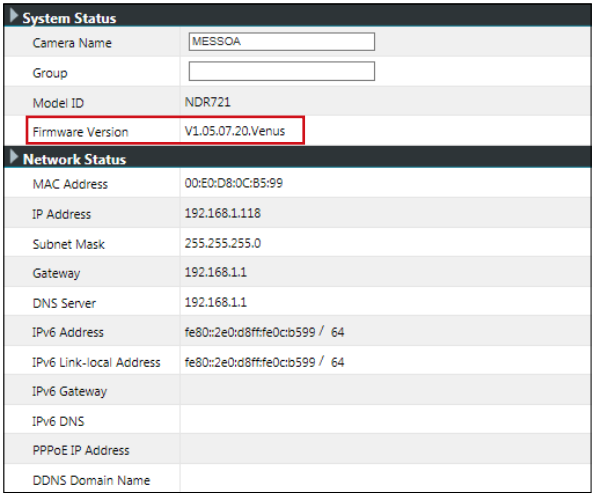
Note: Please ensure that cable management is completed prior to putting back the rear cover.

11. Troubleshooting

Check firmware version

Firmware version may imply the functionalities' updates or availability in the camera system. Therefore, in the first step of troubleshooting and then reporting, it helps to locate the found issues. Newer version firmware may have these issues corrected.

The version code can be found in **Setup -> System -> System Information**, see figure below.



Upgrade device firmware

Firmware upgrade process should be done via the web configuration: **Setup -> System -> Maintenance -> Firmware Upgrade**. Before the process, read the instructions and release notes coming with each new released version.

[Read Before Upgrade]

1. The latest firmware image is available on our official website.
2. Make sure all other client connections are disconnected and current jobs such as recording are required to terminate.
3. During the upgrading period, ***DO NOT*** disconnect the power of the camera. Otherwise the unit might be damaged.

[Steps of Firmware Upgrade]

1. Go to firmware upgrade page on the web. ***Figure 1***
2. Click "Firmware" button to load the firmware image. ***Figure 1***
3. Click "Upgrade" to begin (the upgrade progress bar will pop up). ***Figure 2***
4. Once it is done, the system will reboot automatically.
5. Go back to firmware upgrade page and confirm if the "current version" is up-to-dated. ***Figure 3***

Figure 1

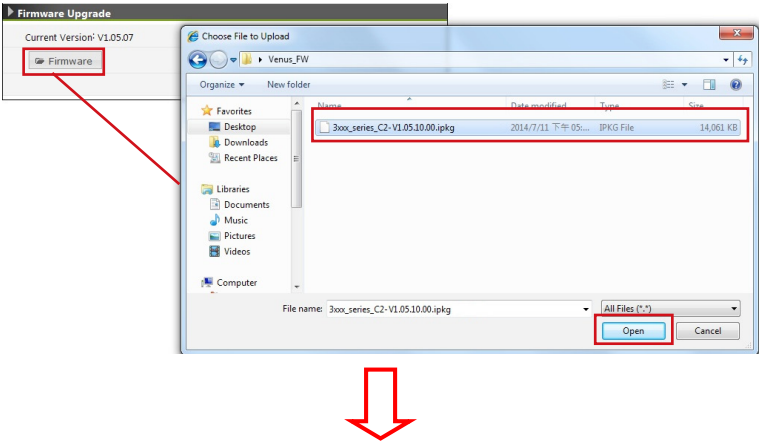


Figure 2

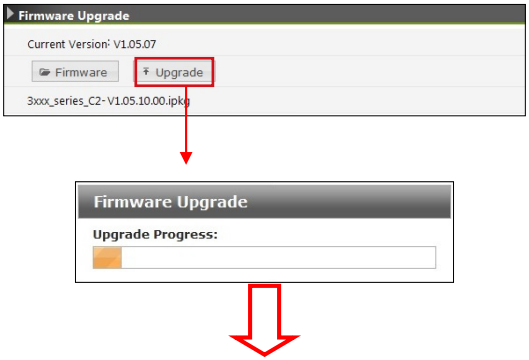
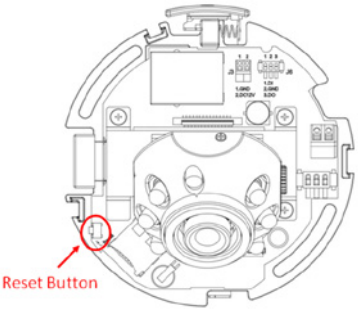
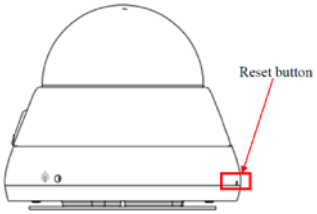


Figure 3

Recover device settings

In some cases, camera system does not respond to any operation. A certain recovering processes would help to get the unit back to initial status, so that it can resume operable / configurable. This will be the operations on the "Reset Button".





Before executing hardware reset, please make sure the system booting process is completed. Normally, it takes 30 seconds to complete the process.

1. **Restart / Reboot the device**

   Press and release the Reset Button within 5 second, the system will be restarted (the LED Indicator will be steady amber during rebooting process). Upon successful reboot, the LED will be steady green during normal operation.

2. **Reset account/password to factory default**

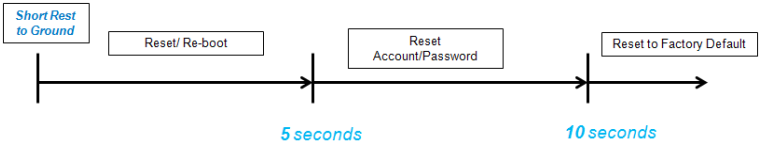
   Press and hold the Reset Button over 5 seconds, the LED will change from steady green to flashing green. During LED flashing as green, then release reset button, ONLY account/password will be reset as factory default, which is Admin/Admin. Please notice that, all configured accounts/passwords will be cleared and only the default one will be reserved.

3. **Reset to factory default settings**

   Press and hold the Reset button over 10 seconds, the LED will change as flashing red. During LED flashing as green, then release the reset button, ALL settings will be reset as factory default.

   The system will enter the restoring process automatically and complete it in 30 seconds after reset button released

   The following chart illustrates the reset behaviors.



Appendix A: Specifications of Fixed Network Camera

Video		
Model Type	NCB750	NCB752
Sensor Type	1/4" 1M progress scan CMOS sensor	1/2.7" 2MP progressive scan CMOS sensor
Active Pixels	1280 x 800 (HxV)	1920 x 1080 (HxV)
Compression	H.264 / MPEG4 / Motion JPEG	
Streaming	Dual simultaneous streams	
Resolution	(WXGA)1280x 800, 1280x 720, 800x450, 640x360, 320x180	1920x1080, 1280x720, 800x450, 640x360, 320x180
Max. Frame Rate	Megapixel (1280x 800) at 30 fps (NTSC/PAL)	Full HD (1920x1080) at 30/25fps (NTSC/PAL)
Day/Night	Mechanical (ICR) D/N Control	
Day/Night Mode	Auto/ Day/ Night	
Shutter Time	Range from 1/960s to 1/30s selectable (60Hz); Range from 1/1000s to 1/25s selectable (50Hz)	Range from 1/7s to 1/30,000s
Minimum Illumination	Color (Shutter Speed: 1/30 sec): 0.4 Lux @10IRE; 0.8 Lux @50IRE B/W (Shutter speed: 30 sec): 0.16 Lux @10IRE; 0.32 Lux @50IRE	Color (Shutter Speed: 1/30sec): 0.08 Lux@10IRE; 0.4 Lux @50IRE B/W (Shutter speed: 1/30sec): 0.02 Lux @10IRE; 0.1 Lux @50IRE
Video Output	NTSC: 720 X 480 @30fps; PAL: 720 X 576 @25fps	
Bit Rate Control	Simultaneous stream bit rate control: CBR/VBR	Simultaneous stream bit rate control: CBR/VBR/ECBR/EVBR
Lens		
Type, Focal Length, F-number	Fixed Lens, f=4mm, F1.5 (Mega pixel lens)	-
View Angle	H: 53.1°/ V: 33.7°	-
IRIS Control	Yes	DC IRIS
Lens Mount	CS Mount	CS Mount
Audio		
Audio Communication	Two-Way Mono Audio, Full-Duplex	
Compression	G.711 μ-Law , PCM, 8kHz	
Audio In/Out	Built -in microphone, External microphone and speaker	
Image Enhancement		
Image Settings	AWB, AES, AGC; IRIS Mode: Off/ Auto; Flickerless Mode: On/ Off; Exposure & Gain Mode: Auto/ Manual; White Balance: Auto/ Fixed; Sharpness, Saturation, Brightness, Contrast: 17 level sensitivity; Exposure Level: 15 level sensitivity;	
Digital WDR	Yes; 8 level sensitivity	
DNR	-	Auto/On/Off
Privacy Zone	Yes; customized threshold privacy zone (up to 8)	
Image Orientation	Mirror, Flip	
Frequency Control	50Hz, 60Hz	
Date & Time Stamp	Yes	
Test Overlay	Yes	
Intelligent Video & Event Management		
Motion Detection	Up to 3 customized threshold detection windows, 101 detected object size or level sensitivity	
Ethernet Detection	Network Fail detection	
Others	Snapshot, digital Zoom, Optimized i-frame setting	
Events	Motion detection, External alarm, Manual Trigger, Network Fail, Periodically Trigger.	Motion/Tamper/Audio detection, External alarm, Manual Trigger, Network Fail, Periodically Trigger.
Event Actions	File upload via FTP, SMTP, SAMBA and SD Card; Notification via FTP, email and External output activation; Video and audio recording to SD Card or SAMBA	
Store Category	Alarm / Motion / Schedule/ Un-interrupt recording Stores video clips and snapshots	

Local Storage		
Memory Card Slot	Micro SD / Micro SDHC Card up to 32 GB	
Memory Card Overwrite	Yes	
Network		
Protocol	IPv4, IPv6, HTTP, HTTPS, SMTP, FTP, DHCP, NTP, TCP/IP, UPnP, RTSP/RTP/RTCP, DNS, DDNS, PPPoE, IGMP, QoS, Bonjour, Samba, Multicast.	
Ethernet	10Base-T/100Base-TX Ethernet connection for LAN / WAN, RJ-45	
PoE	IEEE 802.3af	
ONVIF	Yes	
Browser	IE Browser 8.0 or 9.0	IE Browser 8.0 or above, Chrome, Firefox, Safari
Security	Three-level access with password protection	
I/O & Controls		
Power	DC 12V: DC Jack (2.0mm) AC 24V: Screwless Terminal block	
Power LED Indicator	Yes	
Alarm In/Out	Terminal Block 1 in / 1 out	
Network	RJ-45 with LEDs (Network indicator)	
Audio In/Out	3.5mm Phone Jack 1 in / 1 out for external microphone/speaker; Built-in Microphone	
Analog Video	BNC X1, 1.0Vp-p, 75Ω	
Reset	Within 1 sec for rebooting system; more than 10 sec until red LED starts to flash for loading default	
Bicolor LED	Focus & Power & System Status	
Focus Assist Button	YES (fine tune focus according to LED indicator)	
Power		
Power Requirement	DC 12V & AC 24V ± 10% / PoE(IEEE 802.3af)	
Power Consumption (Max.)	8W	
Mechanical		
Dimensions(WxDxH)	66 x 65.5 x 55 mm (2.60" x 2.58" x 2.17")	
Weight	270g (0.60 lb) w/o lens	
Battery Backed-up Real-time Clock	Yes; Internal RTC	
Environmental		
Operating Temperature	0ºC ~ 50ºC (32ºF ~ 122ºF)	
Operating Humidity	20~ 90% RH	
Storage Temperature	-10°C ~ 55°C (14°F ~ 131°F)	
Regulatory		
Approvals	CE, FCC, RoHS	
Ordering Information		
Accessories	Wall mount with free pack-in camera stand, Power Adapter	Wall Mount Stand

Note: 1. Memory card not included.

2. No memory card clot & local storage function for Argentina and Ecuador

3. Product specifications and pictures are subject to change without notice.

Appendix B: Specifications of IR Bullet Network Camera

Video		
Model Type	NCR770	NCR772
Sensor Type	1/4" 1M progress scan CMOS sensor	1/2.7" 2MP progressive scan CMOS sensor
Active Pixels	1280 x 800 (HxV)	1920 x 1080 (HxV)
Compression	H.264 / MPEG4 / Motion JPEG	
Streaming	Dual simultaneous streams	
Resolution	(WXGA)1280x 800, 1280x 720, 800x450, 640x360, 320x180	1920x1080, 1280x720, 800x450, 640x360, 320x180
Max. Frame Rate	Megapixel (1280x 800) at 30 fps (NTSC/PAL)	Full HD (1920x1080) at 30/25fps (NTSC/PAL)
Day/Night	Mechanical (ICR) D/N Control	
Day/Night Mode	Auto/ Day/ Night	
Shutter Time	Range from 1/960s to 1/30s selectable (60Hz); Range from 1/1000s to 1/25s selectable (50Hz)	Range from 1/7s to 1/30,000s
Minimum Illumination	IR LED Off (shutter speed: 1/30 sec): 0.6 Lux @10IRE; 1.2 Lux @50IRE IR LED On: 0 lux	IR LED Off (shutter speed: 1/30 sec): 0.2 lux @10IRE; 0.8 lux @50IRE; IR LED On: 0 lux
Video Output	NTSC: 720 X 480 @30fps; PAL: 720 X 576 @25fps	
Bit Rate Control	Simultaneous stream bit rate control: CBR/VBR	Simultaneous stream bit rate control: CBR/VBR/ECBR/EVBR
Lens		
Type, Focal Length, F-number	Built-in Fixed Lens, f=4.2mm, F1.8 (Mega pixel lens)	Built-in Fixed Lens, f=4mm, F1.8 (Mega pixel lens)
View Angle	H: 49.8°/ V: 39°	H: 84.8°/ V: 45.2°
IR LEDs		
LED Quantity	12 pcs (850nm)	
IR Distance	10 meters (33 ft.)	
IR turn on status	Under 10 Lux by auto control (light sensor), threshold adjustable in UI	
LED Life	More than 10,000 hours (50ºC)	
Image Enhancement		
Image Settings	AWB, AES, AGC; Flickerless Mode: On/ Off; Exposure & Gain Mode: Auto/ Manual; White Balance: Auto/ Fixed; Sharpness, Saturation, Brightness, Contrast: 17 level sensitivity; Exposure Level: 15 level sensitivity;	
Digital WDR	Yes; 8 level sensitivity	
DNR	-	Auto/On/Off
Privacy Zone	Yes; customized threshold privacy zone (up to 8)	
Image Orientation	Mirror, Flip	
Frequency Control	50Hz, 60Hz	
Date & Time Stamp	Yes	
Test Overlay	Yes	
Intelligent Video & Event Management		
Motion Detection	Up to 3 customized threshold detection windows, 101 detected object size or level sensitivity	
Ethernet Detection	Network Fail detection	
Others	Snapshot, digital Zoom, Optimized i-frame setting	
Events	Motion detection, Manual Trigger, Network Fail, Periodically Trigger.	Motion/Tamper detection, Manual Trigger, Network Fail, Periodically Trigger.
Event Actions	File upload via FTP, SMTP and SAMBA; Notification via FTP, and email; Video recording to SAMBA	
Store Category	Alarm / Motion / Schedule/ Un-interrupt recording Stores video clips and snapshots	

Network		
Protocol	IPv4, IPv6, HTTP, HTTPS, SMTP, FTP, DHCP, NTP, TCP/IP, UPnP, RTSP/RTP/RTCP, DNS, DDNS, PPPoE, IGMP, QoS, Bonjour, Samba, Multicast.	
Ethernet	10Base-T/100Base-TX Ethernet connection for LAN / WAN, RJ-45	
PoE	IEEE 802.3af	
ONVIF	Yes	
Browser	IE Browser 8.0 or 9.0	IE Browser 8.0 or above, Chrome, Firefox, Safari
Security	Three-level access with password protection	
I/O & Controls		
Power	DC Jack (2.0mm)	
Power LED Indicator	Yes	
Network	RJ-45 with LEDs (Network indicator)	
Reset	Within 1 sec for rebooting system; more than 10 sec until red LED starts to flash for loading default	
Bicolor LED	Focus & Power & System Status	
Power		
Power Requirement	DC 12V ± 10% / PoE(IEEE 802.3af)	
Power Consumption (Max.)	9W	
Mechanical		
Dimensions(ΦxH)	Φ60 mm x 114 mm (Φ 2.4" x 4.48")	
Weight	548g (1.21 lb) w/o bracket	
Protection	IP67	
Battery Backed-up Real-time Clock	Yes; Internal RTC	
Environmental		
Operating Temperature	-10°C ~ 50°C (14°F ~ 122°F)	
Operating Humidity	20~ 90% RH	
Storage Temperature	-10°C ~ 55°C (14°F ~ 131°F)	
Regulatory		
Approvals	CE, FCC, RoHS	
Ordering Information		
Accessories	Wall mount with free pack-in camera stand, Power Adapter	Wall Mount Stand

Note: 1. Memory card not included.

2. No memory card clot & local storage function for Argentina and Ecuador

3. Product specifications and pictures are subject to change without notice.

Appendix C: Specifications of Indoor IR Dome Network Camera

Video			
Model Type	NDR720	NDR721	NDR722
Sensor Type	1/4" image sensor		1/2.7" 2MP progressive scan CMOS sensor
Active Pixels	1280 x 1024 (HxV)		1920 x 1080 (HxV)
Compression	H.264 / MPEG4 / Motion JPEG		
Streaming	Dual simultaneous streams	Simultaneously multi-profile streaming	Dual simultaneous streams
Resolution	(WXGA)1280x 800, 1280x 720, 800x450, 640x360, 320x180	1280x1024, 1024x768, 800x600, 640x480, 320x240, 160x120 (1.3M mode) 1280x720, 800x450, 640x360, 320x180 (16:9 mode)	1920x1080, 1280x720,800x450, 640x360, 320x180
Max. Frame Rate	Megapixel (1280x 800) at 30 fps (NTSC/PAL)	1.3MP (1280x1024) at 30 fps (NTSC); 1.3MP (1280x1024) at 25 fps (PAL)	Full HD (1920x1080) at 30/25fps (NTSC/PAL)
Day/Night	Mechanical (ICR) D/N Control		
Day/Night Mode	Auto/ Day/ Night		
Shutter Time	Range from 1/960s to 1/30s selectable (60Hz); Range from 1/1000s to 1/25s selectable (50Hz)		Range from 1/7s to 1/30,000s selectable
Minimum Illumination	IR LED Off (shutter speed: 1/30 sec): 0.4 Lux @10IRE; 0.8 Lux @50IRE IR LED On: 0 lux	IR LED Off (shutter speed: 1/30 sec): 0.1 Lux @10IRE; 0.5 Lux @50IRE IR LED On: 0 lux	
Bit Rate Control	Simultaneous stream bit rate control: CBR/VBR	Multi-profile bit rate control: CBR/ VBR/ ECBR/ EVBR	
Lens			
Lens Type	Built-in; Fixed Lens		
Focal Length	f=4 mm, F1.5 (Mega pixel lens)	f=2.8 mm, F2.0 (Mega pixel lens)	f=4 mm, F1.5 (Mega pixel lens)
View Angle	H: 53.1°/ V: 33.7°	H: 64.7°/ V: 52.5°	H: 77.4°/ V: 45.1°
View Angle Adjustment	Tilt: from 28 ° to 70 ° (Max.)	-	-
IR LEDs			
LED Quantity	16 pcs Matrix IR (850nm)	6pcs (850nm)	16 pcs Matrix IR (850nm)
IR Distance	7 meters (23 ft.)	5 meters (16.40ft.)	7 meters (23 ft.)
IR turn on status	Under 10 Lux by auto control (light sensor), threshold adjustable in UI		
LED Life	More than 10,000 hours (50ºC)		
Audio			
Audio Communication	-	One-way audio	-
Compression	G.711 μ-Law , PCM, 8kHz	G.711, PCM, 64kHz	G.711 μ-Law , PCM, 8kHz
Audio In/Out	Built -in microphone		
Image Enhancement			
Image Settings	AWB, AES, AGC; Flickerless Mode: On/ Off; Exposure & Gain Mode: Auto/ Manual; White Balance: Auto/ Fixed; Sharpness, Saturation, Brightness, Contrast: 17 (level 0~16) level sensitivity; Exposure Level: 15 (level 1~15) level sensitivity		
Digital WDR	Yes		
DNR	-	-	Auto/On/Off
Privacy Zone	Yes; customized threshold privacy zone (up to 8)		
Image Orientation	Mirror, Flip		
Frequency Control	50Hz, 60Hz		
Date & Time Stamp	Yes		
Test Overlay	-	-	Yes

Intelligent Video & Event Management			
Motion Detection	Up to 3 customized threshold detection windows, 101 (0~ 100) detectd object size or level sensitivity		
Audio Detection	-	101 (0~ 100) level threshold	-
Ethernet Detection	Network Fail detection		
Others	Snapshot, digital Zoom, Optimized i-frame setting		
Events	Motion detection, Manual Trigger, Network Fail, Periodically Trigger.	Motion detection, Audio detection, External alarm, Manual Trigger, Network Fail, Periodically Trigger	Motion/Tamper detection, Manual Trigger, Network Fail, Periodically Trigger
Event Actions	File upload via FTP, SMTP and SAMBA; Notification via FTP, and email; Video and audio recording to SAMBA		
Store Category	Alarm / Motion / Schedule/ Un-interrupt recording; Stores video clips and snapshots		
Local Storage			
Memory Card Slot	-	Micro SD / Micro SDHC Card up to 32 GB	-
Memory Card Overwrite	-	Yes	-
Network			
Protocol	IPv4, IPv6, HTTP, HTTPS, SMTP, FTP, DHCP, NTP, TCP/IP, UDP, UPnP, RTSP/RTCP/RTP,DNS,DDNS, PPPoE, IGMP, ICMP, QoS, Bonjour, Samba, Multicast, ARP		
Ethernet	10Base-T/100Base-TX Ethernet connection for LAN/WAN, RJ-45		
ONVIF	Yes		
Browser	IE Browser 8.0 or 9.0	IE Browser 8.0 or above, Chrome, Firefox, Safari	
Security	Three-level access with password protection		
I/O & Controls			
Power	DC Jack (2.0mm)	Terminal Block	DC Jack (2.0mm)
Power LED Indicator	Yes		
Alarm In/Out	-	Terminal Block 1 in / 1 out	-
Network	RJ-45 with LEDs (Network indicator)		
Audio In/Out	Build in microphone		
Reset	Within 1 sec for rebooting system; More than 10 sec until red LED starts to flash for loading default		
Bicolor LED	Power & System Status		
Power			
Power Requirement	DC 12V ± 10% / PoE (IEEE 802.3af)		
Power Consumption	7W		
Mechanical			
Dimensions (ΦxH)	Φ83 mm x 73.3 mm (Φ 3.26" x 2.92")	Φ90 mm x 49 mm (3.54" x 1.93 ")	Φ83 mm x 73.3 mm (Φ 3.26" x 2.92")
Weight	300g (0.66 lb)	160g (0.354 lb)	300g (0.66 lb)
Battery Backed-up Real-time Clock	Yes; Internal RTC		
Pan/Tilt Adjustment	-	Tilt: from 32° to 90° (Max.)	Tilt: from 28° to 70° (Max.)
Environmental			
Operating Temperature	0°C ~ 50°C (32°F ~ 122°F)	0°C ~ 40°C (32°F ~ 104°F)	0°C ~ 50°C (32°F ~ 122°F)
Operating Humidity	20~ 90% RH	20~ 80% RH	20~ 90% RH
Storage Temperature	-10°C ~ 55°C (14°F ~ 131°F)	-10°C ~ 50°C (14°F~122°F)	-10°C ~ 55°C (14°F ~ 131°F)
Regulatory			
Approvals	CE, FCC, RoHS		
Ordering Information			
Accessories	Ceiling mount with free pack-in metal bracket, Power Adapter	Surface mount: standard package support	Ceiling Mount Metal Bracket Wall Mount Bracket (optional) : SAD002

Note: 1. Memory card not included.

2. No memory card clot & local storage function for Argentina and Ecuador

3. Product specifications and pictures are subject to change without notice.